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1989-1994

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1989

STI Bulletin

Scientific and Technical Information

NASA
National Aeronautics
and Space Administration

Volume XIX, No. 1

Scientific and Technical Information Division

January 1989

Focus On...

Each issue of the STI Bulletin features a product or service provided by personnel at the STI Facility. This month the Bulletin will focus on:

CONTINUING BIBLIOGRAPHY SERIES

This article is continued from the November / December issue of the Bulletin.

NASA Patent Abstracts Bibliography, NASA SP-7039

NASA Patent Abstracts Bibliography (PAB), issued semiannually, includes annotated references to NASA-owned inventions covered by U.S. patents and applications for patents announced in *STAR* during the referenced six month period. Several thousand inventions result each year from the aeronautical and space research supported by the National Aeronautics and Space Administration. The inventions having important use in government programs or significant commercial potential are usually patented by NASA. These inventions cover practically all fields of technology and include many that have useful and valuable commercial application. NASA inventions best serve the interests of the United States when their benefits are available to the public. This bibliography is published as a service to companies, firms, and individuals seeking new, licensable products for the commercial market.

Format

Each issue of NASA PAB has a separately bound Abstract Section (Section 1) and Index Section (Section 2). Although each Abstract Section covers only the indicated six month period, the Index Section is cumulative covering all NASA-owned inventions announced in *STAR* since 1969. Thus a complete set of NASA PAB would consist of the Abstract Sections of Issue 04 (January 1974) and Issue 12 (January 1978) and the Abstract Section for all subsequent issues and the Index Section for the most recent issue.

Each entry in the Abstract Section consists of a *STAR* citation accompanied by an abstract plus a key illustration taken from the patent or application for patent. Entries are arranged by the 10 major subject divisions and 76 subject categories found in *STAR*.

Technology for Large Space Systems, NASA SP-7046

Technology for Large Space Systems, issued semiannually, is designed to be helpful to the researcher and

manager engaged in the developing technology within the discipline areas of the Large Space Systems Technology (LSST).

The coverage includes documents that define specific missions that will require large space structures to achieve their objectives. The methods of integrating advanced technology into system configurations and ascertaining the resulting capabilities is also addressed. A wide range of structural concepts are identified. These include erectable structures which are Earth fabricated and space assembled, deployable antennas which are fabricated, assembled, and packaged on Earth with automatic deployment in space, and space fabricated structures which use pre-processed materials to build the structure in orbit. The supportive technology that is necessary for full utilization of these concepts is also included. These technologies are identified as analysis and design techniques, structural and thermal analysis, structural dynamics and control, electronics, advanced materials, assembly concepts, and propulsion.

The selected items are grouped into categories especially selected for this publication, and differ from those found in *STAR* and *IAA*.

Space Station Systems, NASA SP-7056

Space Station Systems, issued semiannually, is designed to be helpful to the researchers, designers, and managers engaged in the design and development of technology, configurations, and procedures that enhance efficiencies of current and future versions of Space Station. The coverage includes documents that define major systems and subsystems, servicing and support requirements, procedures and operations, and missions for the current and future Space Station. In addition, analytical and experimental techniques and mathematical models required to investigate the different systems / subsystems and

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conduct trade studies of different configurations, designs, and scenarios are included. A general category completes the list of subjects addressed by this document.

The selected items are grouped into categories especially selected for this publication, and differ from those found in *STAR* and *IAA*.

Management, NASA SP-7500

Management, issued annually, gathers together references to pertinent documents to assist the NASA manager to be more productive. Items are selected and grouped according to their usefulness to the manager as manager.

The selected items are grouped into ten categories especially selected for this publication, and differ from those found in *STAR* and *IAA*.

NASA Scientific and Technical Publications: A Catalog..., NASA SP-7063

NASA Scientific and Technical Publications: A Catalog..., includes publicly available reports from four NASA report series. The scope of each series is defined as follows:

Special Publications are often concerned with subjects of substantial public interest. They report scientific and technical information derived from NASA programs for audiences of diverse technical backgrounds.

Reference Publications contain compilations of scientific and technical data of continuing reference value.

Conference Publications record the proceedings of scientific and technical symposia and other professional meetings sponsored or co-sponsored by NASA.

Technical Papers present the results of significant research conducted by NASA scientists and engineers.

The selected items are arranged by the 10 major subject divisions and 76 subject categories found in *STAR*.

Availability of Continuing Bibliographies

The continuing bibliographies are distributed to NASA Centers, NASA contractors and University libraries free of charge from the NASA STI Facility. All other domestic organizations that are registered with the STI Facility can obtain the bibliographies on a pay basis. The general public may purchase any of the bibliographies from NTIS. Cited documents are available from multiple sources as noted in each issue.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Advanced Turboprop Project (NASA SP-495)

At the direction of Congress, a task force headed by NASA was organized in 1975 to identify potential fuel saving concepts for aviation. The result was the Aircraft Energy Efficiency (ACEE) Program, implemented in 1976. An important part of the program was the development of advanced turboprop technology for Mach 0.65 to 0.85 applications having a potential fuel saving of 30 to 50 percent relative to existing turbofan engines. This document presents an historical perspective of that development and the accomplishments that brought the turboprop to successful flight tests in 1986 and 1987. (Avail: NTIS, \$19.95)

Infrared Astronomical Satellite (IRAS) Catalogs and Atlases (NASA RP-1190)

The Infrared Astronomical Satellite (IRAS) was launched on January 26, 1983. During its 300-day mission, IRAS surveyed over 96% of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. Volume 1 describes the instrument, the mission, and data reduction. Volumes 2-6 present the observations of the approximately 245,000 individual point sources detected by IRAS; each volume gives sources within a specified range of declination. Volume 7 gives the observations of the approximately 16,000 sources spatially resolved by IRAS and smaller than 8'. (Avail: NTIS)

New Series on Aerospace Management

The first issue of a new series on aerospace management, *Issues in NASA Program and Project Management*, NASA SP-6101 was recently released. This collection of papers and resources on aerospace management issues is inspired by a desire to benefit from the lessons learned from past projects and programs. Inherent in the NASA culture is a respect for divergent viewpoints and innovative ways of doing things. This publication presents a wide variety of views and opinions. Good management is enhanced when program and project managers examine the methods of veteran managers, considering the lessons they have learned and reflecting on their own guiding principles.

(Avail: GPO)

1988 Index to NASA STI Bulletin

(January - December 1988)

-A-

Accession Numbers Range Searchable OCT
ANSI-STD In/MIL-STD Out AUG
ARIN Users Meeting February 3-4, 1988 MAR

-B-

Begin Menu, revised MAY

-C-

Change of Address MAR, MAY, AUG
Commercial Thesaurus NOV/DEC
Computer Aided Indexing Article Published AUG
Continuing Bibliography Series OCT, NOV/DEC
Corporate Sources, search techniques JUL
Criss-Cross Directory Available Through SLA JUL
Current Awareness Tool for Managers
Available Online AUG

-D-

DND Updated FEB, MAY
Document Distribution By STAR
Subject Category OCT
Document Ordering Service SEP
Express Delivery Service JUN

-E-

Export-Controlled Citations SEP
Express Delivery Service JUN

-F-

FAR Supplement Requires Data Delivery JUL
File Directory FEB
Foreign Technology Bibliographies, 1987 JUL
From the Centers
Johnson SEP
LeRC FEB, MAR, JUN
NSTL Name Change JUN

-I-

Integrated Libray System Meeting SEP
Israeli STI Exchange Program SEP

-L-

LeRC Automates Bibliographic Process FEB
LeRC Personnel Change MAR

-M-

Machine Aided Indexing Demonstrated
at NFAIS Seminar JAN
Management Operations Working Group
to meet JAN
1988 Membership List MAR
meeting highlights APR

Meetings with Israeli STI Exchange
Program Manager SEP
Milestone Firsts ALL

-N-

NASA Tech Briefs, New Fields APR
New Thesaurus Terms FEB, MAR, MAY, OCT
Notice
Change of Address MAR, MAY, AUG
Literature Search Service FEB
SCAN FEB
NSTL Name Change JUN

-O-

Older NASA TMs and SPs Now Available JUN

-P-

Publications

A Bibliography of Dunes: Earth, Mars,
and Venus, NASA CR-4149 OCT
Astronautics and Aeronautics, 1978,
NASA SP-4023 FEB
Atlas of Galaxies Used for Measuring the
Cosmological Distance Scale,
NASA SP-496 NOV/DEC
COSMIC Software Catalog, 1988 Edition,
NASA CR-181461 JAN, MAY
Criss Cross Directory JUL
European Science and Technology 1987,
NASA SP-7068 JUL
Into the Thermosphere: The Atmosphere
Explorers, NASA SP-490 APR
Japanese Science and Technology 1987,
NASA SP-7067 JUL
Microgravity Science and Applications
Bibliography 1987 Revisions,
NASA TM-4067 NOV/DEC
NASA Historical Data Book,
NASA SP-4012 (3 volumes) JUL
NASA Information Sciences and Human
Factors Program Annual Report,
NASA TM-4064 OCT
NASA Thesaurus: Astronomy Vocabulary,
NASA SP-7069 SEP
NASA Thesaurus Supplement,
NASA SP-7053(Suppl. 4) JAN
NASA/Army Rotorcraft Technology,
NASA CP-24955 (3 volumes) MAY
O Stars and Wolf-Rayet Stars,
NASA SP-497 OCT
Planetary Geology: Goals, Future Directions,
and Recommendations,
NASA CP-3005 OCT
Present State of Knowledge of the Upper
Atmosphere 1988: An Assessment Report,
NASA RP-1208 OCT
Reflectance Spectroscopy in Planetary Science:
Review and Strategy for the Future,
NASA SP-493 AUG

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Reports of Planetary Astronomy - 1988,
 NASA TM-4063 NOV/DEC
 Reports of Planetary Geology and Geophysics
 Program - 1987, NASA TM-4041 OCT
 Sapping Features of the Colorado Plateau:
 A Comparative Planetary Geology Field
 Guide, NASA SP-487 MAY
 Soviet Science and Technology 1987,
 NASA SP-7066 JUL
 Spacelab: An International Success Story,
 NASA SP-487 MAY
 SPINOFF JAN
 The M-Type Stars, NASA SP-492 JAN
 Technology for Future NASA Missions: Civil
 Space Technology Initiative (CSTI) and
 Pathfinder, NASA CP-3016 NOV/DEC
 1988 NASA Thesaurus,
 NASA SP-7064 (3 volumes) JAN

-R-

References Products Updated AUG
 Report and Grant Numbers in *IAA* and *STAR* ... OCT

-S-

Search Techniques
 Accession Numbers OCT
 Corporate Sources JUL
 Report and Grant Numbers OCT
 Shuttle Launch OCT
 SPINOFF-Technology Twice Used JAN
 Standing Order Service for NASA Sponsored
 N&X Reports FEB
 STI Division Moves JUN
 STI Facility, User Services Section OCT
 STI Services, Available to Eligible Universities .. MAR

-T-

Technical Publications Program Productivity
 Initiative JUN
 Thesaurus Definitions
 for Scope and Coverage JUN, AUG
 Now Online JAN
 Three-Volume NASA Thesaurus in 1988 JAN
 Training Schedule, NASA/RECON JAN, MAY

-W-

What's New on NASA/RECON APR

BROWSE and TYPE: Two Forgotten Commands

Dial-Up Options for Online Support

The August 1988 *STI Bulletin* carried an article highlighting *Managers*, a weekly current awareness tool which focuses on management developments and trends. In that article, users were instructed to run the stored *Managers* search by entering QUERY EXECUTE MANAGERS(NAHQ), then DISPLAY, BROWSE, or TYPE to review citations.

Some infrequent users of the NASA/RECON system have since indicated that they are confused about the difference in the commands and the results that are produced by each. The DISPLAY command may be used by either dedicated line or dial-up users, BROWSE and TYPE, however, are available only through dial-up access to RECON. The question for dial-up users over which command to use is answered simply by their preference for viewing citations.

The DISPLAY command enables users to view accession numbers, citations, or parts of citations from sets created during a RECON session. This command, which may be input by entering DISPLAY or D, must be combined with an operand such as an accession number to view a single citation.

EXAMPLE: DISPLAY 88N10001 or
D 88N10001

Entering the DISPLAY command followed by a set number allows users to view citations within the set, one screen at a time.

EXAMPLE: DISPLAY 1 or
D 1

Once the first citation has been reviewed, the DISPLAY or D is necessary to view each of the succeeding citations in the set.

The BROWSE and TYPE commands were created before many users had access to dedicated printers. At that time, the TYPE command was the only way for users to print citations as they were being viewed. With dedicated printers, as most users now have, simply activating the printer will cause citations to be printed regardless of the command used to view them, making the functions of BROWSE and TYPE indistinguishable.

The BROWSE and TYPE commands are available only to dial-up users. They are similar to the DISPLAY command in that they allow users to view citations or parts of citations in a set. However, to DISPLAY each full record in a set consisting of 25 items, the DISPLAY command must be entered 25 times. To BROWSE or TYPE the same set, the command is entered only once.

EXAMPLE: BROWSE 1/2/ALL
TYPE 1/2/ALL

The following example would call up only the first citation in the set.

EXAMPLE: BROWSE 1 or TYPE 1
BR 1 or T 1

If, however, the user specifies a range of items to be BROWSEd or TYPEd, the citations within that range will continuously scroll up the screen until the end of the range is reached. If the printer is activated, the citations will also be printed as they scroll.

EXAMPLE: BR 1/2/1-500 or
T 1/2/1-500

Users of TTY-type terminals who are not using a communications software package such as Crosstalk or Smartcom may pause the BROWSE or TYPE functions by typing CTRL-s, and continue by typing CTRL-q. Hitting the BREAK key twice will interrupt the BROWSE or TYPE in progress and return the user to an ENTER prompt. Searchers who are using communications software may execute these functions using the commands listed in the documentation for their software package.

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on NASA/RECON. Definitions are given for selected terms. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility (301) 621-0103.

ELECTRON-POSITRON PLASMAS

EXTRAVEHICULAR MOBILITY UNITS

Added Scope Note

SN (LIMITED TO SPACESUIT UNITS OF
THAT NAME DESIGNED FOR THE
SPACE TRANSPORTATION SYSTEM)

FIELD ALLIGNED CURRENTS

FUEL CONSERVATION

use FUEL CONSUMPTION

GALACTIC BULGE

GRID GENERATION (MATHEMATICS)

HELIOTRONS

HOLES (MECHANICS)

HORIZONTAL SHEAR WAVES

use SH WAVES

HORIZONTALLY POLARIZED SHEAR WAVES

use SH WAVES

K-EPSILON TURBULENCE MODEL

KAPPA EPSILON TURBULENCE MODEL

use K-EPSILON TURBULENCE MODEL

Continued on page 4

National Aeronautics and
Space Administration
Code NTT-4
Washington, D.C.
20546

Official Business

Penalty for Private Use, \$300

THIRD-CLASS BULK RATE
POSTAGE & FEES PAID
NASA
PERMIT No. G 27



POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

Thesaurus Terms *Continued from page 3*

LARGE DEPLOYABLE REFLECTOR
LASER BEAMS

Added Scope Note

SN (LIMITED TO THE TRANSMISSION
AND INTERACTIONS OF LASER
RADIATION; FOR THE QUANTITA-
TIVE AND QUALITATIVE CHARAC-
TERISTICS OF THE RADIATION PRO-
DUCED BY A LASER USE 'LASER
OUTPUTS')

LASER OUTPUTS

Added Scope Note

SN (LIMITED TO THE QUANTITATIVE
AND QUALITATIVE CHARACTERIS-
TICS OF THE RADIATION PRO-
DUCED BY A LASER; FOR THE
TRANSMISSION AND INTERACTIONS
OF LASER RADIATION USE 'LASER
BEAMS')

MANNED MANEUVERING UNITS

Added Scope Note

SN (LIMITED TO ASTRONAUT
PROPULSIVE MANEUVERING UNITS
OF THAT NAME DESIGNED FOR
THE SPACE TRANSPORTATION SYS-
TEM AND THE SPACE STATION)

MESH GENERATION (MATHEMATICS)

use GRID GENERATION (MATHEMATICS)

MICROWAVE SIGNATURES

MIXING LAYERS (FLUIDS)

N-BODY PROBLEM

use MANY BODY PROBLEM

NUCLEAR ASTROPHYSICS

NUCLEAR BULGE (GALAXIES)

use GALACTIC BULGE

OPTICAL MATERIALS

PHASE SEPARATION (MATERIALS)

RESONANT TUNNELING

RHODAMINE

SH WAVES

STI Bulletin is distributed to established users to in-
form them about NASA's scientific and technical information
products and services.

RECON operational problems may be directed to the
RECON Coordinator at:

NASA STI Facility
P.O. Box 8757
B.W.I. Airport, MD 21240
(301) 621-0300

Suggestions, material to be considered for inclusion, and
comments may be directed to Jackie Streeks at the above
address or telephone (301) 621-0105, or John Wilson, NASA
Headquarters, Code NTT-2, Washington, DC 20546, (202)
755-1246.

Detach label with instructions for address or distribution change
and mail to: ATTN: Registration Services, NASA STI Facility.

STI Bulletin

Scientific and Technical Information



Volume XIX, No. 2

Scientific and Technical Information Division

February 1989

Focus On...

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the Bulletin will focus on:

Selected Current Aerospace Notices (SCAN)

Selected Current Aerospace Notices (SCAN) is a semimonthly current awareness publication that brings to your attention recently issued report and journal literature pertaining to aeronautic and aerospace research. *SCAN* covers the full spectrum of aeronautic and aerospace information, but segments it into subject groupings or topics, which are narrower in scope than those provided by *Scientific and Technical Aerospace Reports (STAR)* and *International Aerospace Abstracts (IAA)* from which *SCAN* is compiled. *SCAN* announces documents in all relevant topics.

Scope

Each of the separate *SCAN* topics is carefully tailored to fit the needs of a specialized research activity. New topics are added as the need arises, and others are retired or redefined as research demands dictate.

Format

A *SCAN* topic resembles a newsletter. Readers may skim it to find documents of interest to their research needs. Acquisition librarians find *SCAN* useful in identifying documents for their specialized collections.

How the SCAN Program Works

SCAN topic announcements are published twice monthly to coincide with the semimonthly *STAR* and *IAA* issues. Each announcement identifies the issue number and date of the *STAR* and *IAA* issues from which the cited references were selected.

Organizations that subscribe to *SCAN* determine a point of contact known as a *SCAN* representative, usually someone working in the technical library or corporate information center. *SCAN* representatives act as service agents between the STI Facility and

their patrons who wish to receive selected *SCAN* topics. They control the number of topics ordered from the STI Facility and distribute them to their patrons. Two *SCAN* order forms are used to provide this service. The Patron Order Form is for use by patrons who wish to receive all or selected *SCAN* topics. Once the form is complete, it should be forwarded to their organization's *SCAN* Representative for processing and record keeping. Patrons will be placed on internal distribution and receive topics twice a month.

The *SCAN* Representative Order Form is used to consolidate individual patron orders, as well as any topics representatives wish to receive. This form should also be used to change or update the topics and quantities currently being received. Once the total quantity of topics is determined and the form completed, it should be forwarded to Registration Services at the STI Facility for processing. Twice a month the requested topics will be sent to the *SCAN* Representative for disbursement within their organization.

Charges for SCAN

SCAN topics are available without charge to NASA employees, university libraries, and NASA contractors registered with the NASA STI Facility. For other registrants, distribution is available for a nominal charge as follows:

One Set (All 191 <i>SCAN</i> Topics)	\$350.00
Extra Sets (All 191 <i>SCAN</i> Topics)	175.00
Selected <i>SCAN</i> Topics—Each Topic	50.00
Selected <i>SCAN</i> Topics—Extra Copy per Topic ..	25.00

Document Availability

Documents announced in *SCAN* are available for purchase according to provisions given in the introductions to *STAR* and *IAA*. They may also be requested through NASA/RECON's online ordering capability.

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The SCAN Catalog Updated

The SCAN catalog, designed to help users select SCAN topics of interest to their research areas, was recently published. The catalog is divided into three parts:

- The Subjects section is a listing of the topical areas covered as related to STAR and IAA subject divisions and categories
- The Catalog of SCAN Topics is arranged according to STAR and IAA subject categories and gives a brief description of each topic
- The Index to SCAN Topics provides a subject index to the SCAN topics

A limited number of the SCAN Catalogs are available free of charge from the NASA STI Facility. For your copy, call (301) 621-0153 or -0148.

New Telephone Numbers for NASA Langley Research Center

NASA Langley Research Center (LaRC) has completely new telephone numbers. The new main commercial number is (804) 864-1000, and the new FTS number is 928-1000. Individual, 4-digit extension numbers of employees have also changed.

These extensions are listed for selected key contacts at Langley.

Nadine Batkins	(804) 864-2382
Doris Crumpler	(804) 864-2391
Willie Curtis	(804) 864-2388
Carolyn Floyd	(804) 864-2381
Andrew J. Hansbrough	(804) 864-2494
Jane Hess	(804) 864-2355
Jeanne Huffman	(804) 864-2505
Sue Miller	(804) 864-2389
Susan Motley	(804) 864-2390
Bill Owens	(804) 864-2387
Barbara Pasternak	(804) 864-3285
John Samos	(804) 864-5482

New Publications Supervisor

We are pleased to announce that Debbie Drumheller has joined the NASA STI Facility staff as Supervisor of Publications. She comes to us with experience in the printing/publishing field that stretches over a dozen years and in various production capacities.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Infrared Observations of Comets Halley and Wilson and Properties of the Grains (NASA CP-3004)

This report summarizes the presented papers and discussions at a workshop held at Cornell University, August 10-12, 1987 to review the infrared observations of Comet Halley and Comet Wilson and to relate them to optical properties and composition of cometary grains. Relevant laboratory studies are also discussed. Recommendations are made for future infrared comet observations and supporting laboratory investigations. (Avail: NTIS)

Astronautics and Aeronautics, 1985 (NASA SP-4025)

This book has just been published by the Scientific and Technical Information Division and the NASA History Office. This publication is a chronology of events during the year 1985 in the fields of aeronautical and space research, development, and policy.

This paperbound volume of 564 pages includes appendixes, an index, and illustrations. An important

(continued on back page)

New Online ORDERing Option Available

Users of NASA/RECON now have the capability of ORDERing documents online by Report Number in addition to ORDERing by set number and accession number. To ORDER by Report Number, use the following syntax:

Ex: ORDER RN/'NASA-SP-489' or
O RN/'NASA-SP-489'

As with other types of online ORDERS, additional parameters may be included, but are not required. The optional parameters are request type (HC, MF, or BOTH), number of copies, and address.

Details about how to use the online ORDER by Report Number capability will appear in the March issue of the STI Bulletin.

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on NASA/RECON. Definitions are given for selected terms. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

COMET RENDEZVOUS ASTEROID FLYBY
MISSION

COMMUTER AIRCRAFT

COMPACT GALAXIES

COMPUTER ARCHITECTURE

USE ARCHITECTURE (COMPUTERS)

CRAF MISSION

USE COMET RENDEZVOUS ASTEROID

FLYBY MISSION

DISK OPERATING SYSTEM (DOS)

DOS (OPERATING SYSTEM)

USE DISK OPERATING SYSTEM (DOS)

GALACTIC CLUSTERS

ADDED SN (RESTRICTED TO CLUSTERS

OF GALAXIES; EXCLUDES

OPEN CLUSTERS)

GALAXY GROUPS

USE GALACTIC CLUSTERS

INTERACTING GALAXIES

KNOWLEDGE BASES (ARTIFICIAL

INTELLIGENCE)

LAMINAR BOUNDARY LAYER SEPARATION

USE BOUNDARY LAYER SEPARATION

LAMINAR BOUNDARY LAYER

(revised entry)

LDR (TELESCOPE)

USE LARGE DEPLOYABLE REFLECTOR

MS DOS (OPERATING SYSTEM)

USE DISK OPERATING SYSTEM (DOS)

OPEN CLUSTERS

PC DOS (OPERATING SYSTEM)

USE DISK OPERATING SYSTEM (DOS)

PECULIAR GALAXIES

PULSAR MAGNETOSPHERES

RIBLETS

RING GALAXIES

SATELLITE REPAIR

USE ORBITAL SERVICING

SCANNING TUNNELING MICROSCOPY

SHELL STARS

(continued on back page)

NTIS Price Codes Online

NASA/RECON announces the online availability of the NTIS Price Schedule as of January 1989. By typing HELP NTIS, users may access this alternative reference function, providing them with a quick, easily accessible guide to document prices.

When a document's availability is listed as NTIS, a price code for hardcopy (HC) and/or microfiche (MF) is listed in the SAP field. Price codes are based on page count.

The price codes are identified according to the National Technical Information Service schedule, which is updated annually. The HELP screen matches the code found in the document to the actual dollar amount associated with it. The following is a sample of the actual HELP display.

STANDARD PRICE DOCUMENTS AND MICROFICHE

Price Codes	North American Prices	Foreign Prices
A01	\$ 6.95	\$13.90
A02	9.95	19.90
A03	12.95	25.90

A document which, for example, lists a price code of HC A03/MF A01 is available in hardcopy to North American users at a price of \$12.95 and in microfiche at \$6.95.

Requesters are invoiced monthly for documents received from the NASA STI Facility. For more information on how to order documents, call the Facility at (301) 621-0146. For online ordering assistance in NASA/RECON, type HELP ORDER.

National Aeronautics and
Space Administration
Code NTT-4
Washington, D.C.
20546

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Penalty for Private Use, \$300

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LI 001 STIBUL 890221309532A
NASA
SCIEN & TECH INFO FACILITY
ATTN : JUNE SILVESTER
PRODUCT QUALITY
P O BOX 8757 BWI ARPT
BALTIMORE MD 21240



POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

New Thesaurus Terms
(continued from page 3)

SINGLE INPUT SINGLE OUTPUT SYSTEMS
USE SISO (CONTROL SYSTEMS)

SISO (CONTROL SYSTEMS)

SPACECRAFT ENVIRONMENTS

Added Scope Note

SN (LIMITED TO SPACECRAFT INTERNAL
COMPARTMENTS AND CABINS; FOR
SPACECRAFT EXTERNAL ENVIRON-
MENTS REFER TO 'EXTRATERRESTRIAL
ENVIRONMENTS')

STELLAR MAGNETOSPHERES

STRATOSPHERIC WARMING

THREE DIMENSIONAL MODELS

TOMS

USE TOTAL OZONE MAPPING
SPECTROMETER

TOTAL OZONE MAPPING SPECTROMETER

TRIPLE STARS

TURBULENCE MODELS

TWO DIMENSIONAL MODELS

UNIX (OPERATING SYSTEM)

WATER SPLITTING

WHISPERING GALLERY MODES

New Publications (continued from page 2)

reference work, it should be very useful to historians,
NASA personnel, government agencies, congress-
sional staffs, and the media.

(Avail: GPO, No. 033-00-01022-2, Price: \$22)

USSR Space Life Sciences Digest Issue 19
(NASA CR-3922(22))

This document contains abstracts of 47 papers pub-
lished in Russian language periodicals or presented
at conferences and of five new Soviet mono-
graphs. Selected abstracts are illustrated with figures
and tables from the original. Reports on two confer-
ences, one on adaptation to high altitudes, and one
on space and ecology are presented. A book review
of a recent work on high altitude physiology is also
included. (Avail: NTIS)

STI Bulletin is distributed to established users to in-
form them about NASA's scientific and technical information
products and services.

Suggestions, material to be considered for inclusion, and
comments may be directed to Jackie Streeks at the above
address or telephone (301) 621-0105, or John Wilson, NASA
Headquarters, Code NTT-2, Washington, DC 20546, (202)
755-1246.

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and mail to: ATTN: Registration Services, NASA STI Facility.

Focus On . . .

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the Bulletin will focus on:

Research and Technology Objectives and Plans Summary (RTOPs)

The *RTOP Summary* is an annual guide to NASA-sponsored research in progress. It includes the technical summaries and indexes of all Research and Technology Objectives and Plans submitted by the NASA Centers to the NASA Headquarters Office of Aeronautics and Space Technology for management review.

Scope

The *RTOP Summary* represents the NASA research and technology program for the current fiscal year. It is a compilation of the "Summary" portions of each of the RTOPs used for management review and control of research in progress throughout NASA. The *RTOP Summary* is designed to facilitate communication and coordination among concerned technical personnel in government, in industry, and in universities, and to expedite the technology transfer process.

Format

The *RTOP Summary* is arranged in five sections. The first section contains citations and abstracts of the RTOPs. Following this section are four indexes: Subject, Technical Monitor, Responsible NASA Organization, and RTOP Number.

- The *Subject Index* is a listing of the main subject headings by which the RTOPs have been identified.
- The *Technical Monitor Index* is a listing of the names of individuals responsible for the RTOP.
- The *Responsible NASA Organization Index* is a listing of the NASA organizations which developed the RTOPs contained in the journal.
- The *RTOP Number Index* cross-indexes the RTOP number assigned by the NASA responsible organization to the accession number assigned sequentially to the RTOPs in the *RTOP Summary*.

Citations for the individual RTOPs are included in the NASA STI Database as the W70,000 accession series. The RTOP file contains citations for all RTOPs submitted beginning in 1971 through the current fiscal year.

Frequency

The *RTOP Summary* is an annual publication. Each issue covers the research programs approved for a single fiscal year, and is published in January.

Availability

The *RTOP Summary* is distributed annually to NASA Centers and NASA contractors free of charge from the NASA STI Facility.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Microgravity Science and Applications Flight Programs, January-March 1987, Selected Papers (NASA TM-4069)

This report is a compilation of selected papers written by the flight program principal investigators. The Microgravity Science and Applications Flight Program was reviewed by a panel of eight chaired by Professor J. Robert Schrieffer in 1987. Dr. Schrieffer and his committee reviewed the flight program and made recommendations to the Director of the Microgravity Science and Applications Division as to the quality of the science contained in the program and improvements that could be made in some of the research efforts.

(Avail:NTIS)

Publications of the Biospheric Research Program: 1981-1987 (NASA CR-4204)

This document contains a list of publications of in-

(continued on page 3)

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NASA/RECON MOWG HOSTED MARCH 7-8

The NASA/RECON Management Operations Working Group (MOWG) met on March 7 and 8 at the NASA STI Facility near Baltimore, Maryland. The meeting followed a varied agenda, and included presentations on new pricing strategies, the re-design of the NASA/RECON system, and the ongoing research into digital document storage capabilities.

Also discussed was the STI Facility's proactive acquisition policy, whereby Facility personnel attempt to acquire documents that are not currently in the system, but have been requested by users. The documents are then evaluated, and if found to be within scope, accessioned into the STI Database.

Current members and ex-officio members are listed below.

NASA/RECON MANAGEMENT OPERATIONS WORKING GROUP 1989 MEMBERSHIP

Mr. Steve Gass
Stanford University
Terman Eng. Library
Stanford, CA 94305

Ms. Patricia Marshall
AIAA/TIS
555 W. 57th Street
New York, NY 10019

Mr. Garland Gouger
NASA/LaRC
MS-185
Hampton, VA 23655

Ms. Jane Riddle
NASA/GSFC
Building 21, Room 205
Greenbelt, MD 20771

Mr. Richard Tommey
Rohr Industries Inc.
P.O. Box 878
Chula Vista, CA 92012

Mr. Wayne Dominick
Southwestern University
Dept. of Computer Science
P.O. Box 44330
Lafayette, LA 70504

Ms. Barbara Newton
AFWL/SUL
Kirtland Air Force Base
Albuquerque, NM 87117

Ms. Mary Walsh
NASA/ARC
Building 202, MS202-3
Moffett Field, CA 94035

Ms. Rajeana Jensen
Hughes Aircraft Company
2000 E. El Segundo Blvd.
EO E01/E116 Info. Res. P.
El Segundo, CA 90245

Ms. Nan Paik
Rockwell International
Spec. Transp. Sys. Div.
12214 Lakewood Blvd.
Downey, CA 90241

Mr. Mike Goehring
ARAC/Indiana University
611 N. Capitol Avenue
Indianapolis, IN 46204

Ms. Lee Jarabek
NASA/LeRC
21000 Brookpark Road
Library Mail Code 60-3
Cleveland, OH 44135

Mr. Walter Hoegy
NASA/GSFC
GSFC Code 614, Bldg. 21
Greenbelt, MD 20771

Mr. Ralph Lewis
Lockheed Missiles & Space
Technical Info. Center
3251 Hanover Street
Palo Alto, CA 94304

Jean Anderson
California Institute of Technology
Aeronautical Library, 205-45
1201 E. California Boulevard
Pasadena, CA 91125

EX-OFFICIO MEMBERS

John Wilson
NASA/NTT-2
Manager,
NASA/RECON Retrieval Services

Royal Bivins
NASA/CU
Manager,
Information & Network Operations

Jeanette Scisum
NASA/DT
Chief,
Agency Applications

Adelaide Del Frate
NASA/NTT-1
Administrative Librarian

Eleanor Burdette
NASA/DB-12
Chief,
S&T Library & System Support

ORDER By Report Number Feature Added to NASA/RECON

For many NASA/RECON users, the advent of the on-line ORDERing capability a few years ago significantly enhanced the convenience and speed of document ordering. As of February 1989, a new step-saver was added to further increase ordering efficiency. The online ORDER by Report Number capability was announced in February. This article provides a more detailed introduction to the new feature's use.

When a user has only the report number of a document rather than the accession number found in NASA/RECON, the ORDER command can be input with the report number. This saves the user the time it would have taken previously to search the report number in RECON to get the document's accession number to place an online ORDER.

Syntax

An ORDER by Report Number must be input as follows:

ORDER RN/'NASA-SP-489' or
O RN/'NASA-SP-489'

The RN mnemonic, the slash, and the report number itself surrounded by single quotes make up the only required parameters for execution of this command. As with an ORDER by set or accession number, however, other parameters may be added if desired. They include:

Request Type:

O RN/'NASA-SP-489'/HC

Number of Copies:

O RN/'NASA-SP-489'/MF/2

Address:

O RN/'NASA-SP-489'/MF/1/John Doe, Room 200

(Note: For Request Type, users may enter HC for hardcopy, MF for microfiche, BOTH for both hardcopy and microfiche, OR for either type, or STK for stock copy only. For Address, requesters may enter their own information for internal routing, or may enter **FED EX** for overnight delivery, with charges invoiced at a later date.)

But the former capabilities of the ORDER command are not diminished. Through the SELECT command, users may still create sets and ORDER all documents within that set (up to 50), simply by specifying the set number with the ORDER command. For individual documents, the ORDER command and the accession number are needed.

Errors

Error messages under the ORDER by Report Number command are generally self-explanatory, and direct the user toward methods of correction. Errors most commonly made are those involving incorrect or inexact syntax. If, however, there is more than one document associated with a particular report number, the following error message will be generated:

"MULTIPLE ITEMS FOUND. PLEASE ORDER
BY ACCESSION NUMBER."

To find the accession number of the document,

EXPAND the report number, and SELECT the E-number that is shown for that report number to create a set. The set can then be displayed until the correct document is located, and an online ORDER by accession number can be placed.

For more information about the ORDER by Report Number feature, enter HELP ORDER in NASA/RECON.

NEW PUBLICATIONS (continued from page 1)

investigators, supported by the Biospheric Research Program of the Biological Systems Research Branch, Life Sciences Division, Office of Space Science and Applications. It includes publications published as of December 31, 1987 and entered into the Life Sciences Bibliographic Database by the George Washington University. (Avail:NTIS)

Space Medicine Research Publications: 1984-1986 (NASA CR-4184)

This document lists publications of investigators supported by the Biomedical Research and Clinical

(continued on back page)

Revised Scope and Coverage Now Available

The *NASA Scientific and Technical Information System...its Scope and Coverage* has been revised and reissued as NASA SP-7065. This publication lists the subject criteria applied to the various documents to govern the decisions for accepting additions to the NASA STI Database. It also establishes subject guidance for those desiring to add documents to the STI Database or to search the database for documents of interest. *Scope and Coverage* is not intended to be an exhaustive, all-inclusive listing of subjects included in the NASA STI Database. Rather, it is an attempt to provide a broad look at the subject content of the STI Database to assure an understanding of its holdings.

This revision of the September 1978 edition reflects NASA's changing interest in both depth and scope in areas such as the environment, energy production and sources, oceanography, and the social sciences. NASA's interest in scientific and technical information for its database is broadly summarized under the 76 subject categories used in the abstract journals *Scientific and Technical Aerospace Reports* and *International Aerospace Abstracts*. The level of interest is defined in each case as *exhaustive*, *selective*, or *negative*. Sections entitled *Input Subjects of Specific Interest* list representative subjects of interest to NASA within each subject category. They may be disciplines, pure science, technology, applications, or in human factors relative to NASA's missions and programs.

Scope and Coverage is available from NTIS.

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Washington, D.C.
20546

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PRODUCT QUALITY
P O BOX 8757 BWI ARFRT
BALTIMORE MD 21240



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Postal Manual) Do Not Return

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The NASA Scientific and Technical Information (STI) Facility maintains the mailing lists and address file for most of the NASA network. In order to ensure the timely receipt / delivery of NASA products and services, it is very important to maintain complete, accurate and up-to-date addresses and contact points for each user registered with the NASA STI Facility.

Due to the recent circularization many address changes have been reported. So that we can continue to deliver our products and services efficiently, please provide us with any unreported or additional changes on the form below and mail to:

NASA Scientific and Technical Information Facility
Attn: Registration Activity
Post Office Box 8757
Baltimore / Washington International Airport,
Maryland 21240

CHANGE OF ADDRESS

Facility ID No. _____
Organization: _____
Attention: _____
Address: _____

Telephone: () _____

NEW PUBLICATIONS (continued from page 3)

Medicine Programs of the Space Medicine and Biology Branch, Life Sciences Division, Office of Space Science and Applications. It includes publications entered into the Life Sciences Bibliographic Database by the George Washington University as of December 31, 1986.

(Avail:NTIS)

NASA Space/Gravitational Biology Accomplishments (NASA TM-4079)

This report consists of individual technical summaries of research projects of NASA's Space/Gravitational Biology Program, for research conducted during the period January 1987 to April 1988. This program is concerned with using the unique characteristics of the space environment, particularly microgravity, as a tool to advance knowledge in the biological sciences.

(Avail:NTIS)

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Suggestions, material to be considered for inclusion, and comments may be directed to Jackie Streeks at the above address or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT-2, Washington, DC 20546, (202) 755-1246.

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STI Bulletin

Scientific and Technical Information

NASA
National Aeronautics and
Space Administration

Volume XIX, No. 4

Scientific and Technical Information Division

April 1989

Focus On...

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the Bulletin will focus on:

Microcopy Service

If the library or information center at your installation has registered with the NASA STI Facility to receive copies of documents announced in *STAR*, it probably receives those copies in the form of microfiche—small sheets of transparent film that contain up to 98 document pages photographically reduced to a fraction of their original size.

Scope

The NASA STI Facility produces microfiche for NASA and NASA-sponsored documents announced in *STAR* except those that are copyrighted and those that cannot be reproduced due to unusual physical characteristics. About 80 percent of NASA's annual document output is available from NASA *only* on microfiche.

Microfiche of NASA and NASA-sponsored documents that bear either security classifications or distribution limitations are prepared and distributed under appropriate restrictions. Classified and limited documents received from other organizations are not routinely made available on microfiche except to NASA Centers. Requests for them may be referred to the originating organization for response.

Documents available on microfiche are identified in the NASA announcement journals and continuing bibliographies by a pound sign (#) following the accession number, i.e., N87-12345#.

Volume. The NASA STI Facility produces microfiche for about 22,000 documents a year. Approximately 3,500 of these documents are filmed at the Facility, 90% of which are NASA or NASA-sponsored. The remaining documents are received in microfiche form from other agencies, such as DTIC, DOD, ESA, and NTIS, and converted for use in the NASA STI system. The Facility produces about 6,000 silver master microfiche from the NASA or NASA-sponsored documents and converts about 16,000 microfiche from the other agency microfiche for use as working masters. From these masters and converted fiche, the NASA STI Facility makes more than 2 million microfiche copies a year for distribution to U.S. government agencies and their contractors; universities, colleges, public and special libraries; and foreign governmental and private organizations that agree to exchange scientific and technical publications of

value to NASA and to other organizations approved by NASA whose scientific and engineering activities relate to aeronautics. There are about 300 users on automatic distribution and some 2,500 users who receive microfiche on special request.

Format. The first microfiche for every document carries a "header strip" that is legible without magnification. The header strip identifies the document accession number, classification, title, and other descriptive information. If more than one microfiche is required for a document, subsequent fiche carry only the accession number and classification indicators. On "conversion" microfiche, the NASA accession number replaces the number used by the originator.

All microfiche produced by the NASA STI Facility conform to the AIIM Industrial Standard. They measure 105mm by 148mm and contain up to 98 images at a reduction of 24X.

Frequency

The production and distribution of microfiche are geared to the publication cycles of *STAR*. That is, the microfiche copies of documents announced in a particular issue are mailed to user organizations within two days of the publication date of the issue.

Applications

Microfiche can be read through enlargement viewers or "readers"; then they can be reproduced for further dissemination; or they can be "blown back" (enlarged and reproduced in papercopy) for greater user convenience. Besides major economies in mailing and handling, this flexibility allows many variations on simple bulk storage in central files. Selected microfiche, for example, can be grouped, reproduced, and stored in separate facilities for the convenience of subject specialists. They can be circulated as a means of maintaining current awareness among selected users, particularly in active and rapidly progressing fields of science and engineering.

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ASTM Receives Results of Cooperation with NASA

Robert L. Meltzer, Vice President of ASTM was presented with a copy of the new *NASA Thesaurus Definitions* by a NASA Scientific and Technical Information Facility lexicographer, during the Committee on Terminology meeting held on February 23, 1989. ASTM cooperation with NASA dates back to 1987 when the Facility, operated by RMS Associates, contacted Mr. Meltzer and sought cooperation in NASA's effort to present standardized definitions of *NASA Thesaurus* terms to its public. Initially, ASTM definitions were published in the fourth 1985 *NASA Thesaurus Supplement* along with other standardized definitions from the Department of Energy Thesaurus, NASA SP-7, *Dictionary of Technical Terms for Aerospace Use*. Also, definitions are constructed by NASA

lexicographers after consulting with numerous sources and experts. Standardized definitions were edited to conform to NASA's form of entry. Volume 3 of the recently published *NASA Thesaurus*, NASA SP-7064, now contains ASTM definitions for appropriate *NASA Thesaurus* terms.

Notice to STI Bulletin Readers

If you have announcements or articles of general interest to the STI community or search techniques you would like to share with other NASA/RECON users please provide them to us. This is your publication and your input is vital to its success. Contact Jackie Streeks at the NASA STI Facility (301) 621-0105 or John Wilson at NASA Headquarters (202) 755-1246.

Dial-a-Shuttle has Resumed

When the Space Shuttle Discovery returned America to space flight, a special telephone service, called *Dial-a-Shuttle*, provided callers with live broadcasts of conversation between the astronauts and Mission Control at the Johnson Space Center (JSC).

The call-in service, produced by the National Space Society, operates continuously beginning two hours before each space shuttle launch and concluding with the post-landing press conference.

Dial-a-Shuttle provides real-time communications when available. During other times, announcers highlight activities aboard the Shuttle and play pre-recorded tapes of earlier communications.

Broadcast from JSC and produced with the cooperation of NASA, the service is available in the continental United States by dialing 1-900-909-NASA. Toll charges are \$2 for the first minute and 45¢ for each additional minute.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Microgravity Science and Applications Program Tasks 1988 Revision (NASA TM-4097)

This report is a compilation of the active research tasks as of the end of the fiscal year 1988 of the Microgravity Science and Applications Program, NASA Office of Space Science and Applications, involving several NASA centers and other organizations. The purpose of the document is to provide an overview of the program scope for managers and scientists in industry, university, and government communities. The report includes an introductory description of the program, the strategy and overall goal, identification of the organizational

structures and people involved, and a description of each task. The report also provides a list of recent publications. (Avail:NTIS)

Microgravity Science and Applications Bibliography 1988 Revision (NASA TM-4098)

This edition of the Microgravity Science and Applications (MSA) Bibliography is a compilation of government reports, contractor reports, conference proceedings, and journal articles dealing with flight experiments utilizing a low-gravity environment to elucidate and control various processes or with ground-based activities that provide supporting research. It encompasses literature published but not cited in the 1984 Revision and that literature which has been published in the past year. (Avail:NTIS)

NASA Geodynamics Program Summary Report: 1979- 1987 (NASA TM-4065)

This document, the sixth Geodynamics Program report, summarizes the program's achievements from its initiation in 1979 through the end of calendar year 1987.

(Avail:NTIS)

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on NASA/RECON. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

ANTIGUA AND BARBUDA

AUSTRALIAN SPACE PROGRAM

BACKFIRE ANTENNAS—Antennas consisting of radiating feeds, reflector elements, and reflecting surfaces such that the antennas function as open resonators, with radiation from the open end of the resonator.

BLAZARS—Strongly optical polarized active galactic nuclei objects exhibiting BL Lacertae-like and quasar-like characteristics.

CZECHOSLOVAKIAN SPACE PROGRAM

DJIBOUTI

DOPPLER RADAR—Radar which utilizes the Doppler effect to determine the radial component of relative radar target velocities or to select targets having particular radial velocities.

FIELD ALIGNED CURRENTS—Ionospheric and magnetospheric currents aligned along the electric field of a planet.

GRENADA

ISRAELI SPACE PROGRAM

(continued on back page)

NASA/RECON Training Schedule

Below is listed the NASA/RECON training schedule for the latter half of 1989. All classes currently scheduled will be held at the STI Facility near Baltimore, Maryland. Prices listed are for non-NASA personnel.

1989 Basic RECON Session for New Users:

Wednesday, July 19

Wednesday, August 23

Wednesday, September 27

Thursday, October 19

One day

\$100/person

Class size: 12

1989 Advanced RECON Session for Experienced Users:

Thursday, September 28

Wednesday, November 15

One day

\$160/person

Class size: 6

The Basic training session is designed for the beginning NASA/RECON searcher, preferably with some online experience. The STI database, file, and record structure are covered along with the basic RECON system commands. Search strategy formulation, Boolean logic, and query analysis are emphasized as they pertain to the NASA/RECON system. A series of lectures are combined with hands-on practice. Refreshments and lunch are provided.

The Advanced training session is designed for the experienced NASA/RECON searcher. Basic text searching is reviewed as well as more indepth text searching techniques. Advanced RECON system features and stored search formulation and editing are covered. A series of lectures are combined with hands-on practice. Refreshments and lunch are provided.

NASA/RECON Training Registration

Pre-registration is required for all training sessions. To register, call RECON Services at (301) 621-0150 between 8 a.m. and 4:30 p.m. ET, Monday through Friday. If a preferred session is closed, ask to be wait-listed. A confirmation letter and registration package will be forwarded for each reservation placed.

Reservations may be cancelled or changed up to five (5) business days before the session. Cancellations after that date and no-shows will be billed for the full amount. New users are entitled to one free training class.

You may be billed to a standing RECON purchase order, to a new purchase order, or you may pay with a company or personal check.

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Postal Manual) Do Not Return

New Thesaurus Terms (continued from page 3)

LUXEMBOURG SPACE PROGRAM

MAGNETOHYDRODYNAMIC WAVES—Low frequency waves in an electrically highly conducting fluid (such as a plasma) permeated by a static magnetic field. The restoring forces of the waves are, in general, the combination of a magnetic tensile stress along the magnetic field lines and the compressive stress between the field lines and the fluid pressure. Used for Alfvén waves, hydromagnetic waves, and plasma sound waves.

MATTER-ANTIMATTER PROPULSION — Spacecraft propulsion by use of matter-antimatter annihilation reactions.

Focus On . . .

(continued from page 1)

Availability

NASA microfiche are delivered to a central point, such as the library or information center, in each organization that has registered with the NASA STI Facility to receive document delivery service.

Microfiche are distributed in one of three ways:

- Automatic distribution of all microfiche to organizations with broad information needs,
- Selective distribution to organizations that have specified certain *STAR* subject divisions as adequate to meet their needs; and
- On-request distribution to academic and government communities that choose *not* to receive copies automatically.

Dryden Flight Research Center

The following are recent corrections/changes to the Directory of NASA Scientific and Technical Information and Related Organizations.

Ames Research Center
Dryden Flight Research Facility
P.O. Box 273
Edwards, CA 93523
(805) 258-3311 FTS 961-3311 (961-extension)

Linda J. Quinby, *Chief, Dryden Reports & Presentations Branch*

Mail Code: D-ATD

Telephone Extension: 3717

Jean Leonard, *Library*

Mail Code: D-ATL

Telephone Extension: 3702

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STI Bulletin

Scientific and Technical Information

NASA
National Aeronautics and
Space Administration

Volume XIX, No. 5

Scientific and Technical Information Division

May 1989

Focus On...

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the Bulletin will focus on:

NASA/RECON

NASA/RECON (REmote CONsole) is a computerized, online, interactive system for information search and retrieval. It enables users at remote locations to interact directly with NASA's Scientific and Technical Information (STI) Database maintained at the NASA STI Facility.

NASA/RECON is designed:

- To display bibliographic information in ways that help you define your retrieval needs with maximum precision.
- To guide you, through the use of Boolean logic, to the documents relevant to your requirements, and
- To permit simultaneous access for other users throughout the United States.

Scope

NASA STI Database. NASA/RECON offers quick access to comprehensive bibliographic information on more than three million reports, journal articles, and miscellaneous documents of worldwide origin and of special interest to the aerospace community. The major document series accessible on NASA/RECON include:

Scientific and Technical Aerospace Reports (STAR)
International Aerospace Abstracts (IAA)
NASA Research and Technology Objectives and Plans Summary (RTOPS)
NASA Research and Development Contract Search (R&DCS)
Computer Software Management and Information Center (COSMIC)
NASA Tech Briefs
NASA Library Collection
NACA Historical Shelflist
Space Commercialization

Online Access

Online access to NASA/RECON is available to NASA centers, NASA contractors, other government agencies and their contractors, universities, and other

organizations with aerospace related contracts or grants. Eligible domestic organizations desiring access to NASA/RECON services should submit requests in writing to the Scientific and Technical Information Division at NASA Headquarters (NTT-2). Non-NASA organizations are charged a one-time enrollment fee and an annual maintenance fee, and are invoiced monthly for per-hour connect fees and per-offline printed citation fees.

The NASA STI Database is accessible on NASA/RECON daily, Monday through Friday, between 8:00 A.M. and 8:00 P.M. ET, excluding holidays.

Registered NASA/RECON users can access the system through either a dedicated (hard wired) terminal or a dial-up terminal. A dedicated terminal is an IBM 3270 type device directly connected to NASA/RECON and a dial-up terminal is any other type which accesses NASA/RECON via a telephone line.

The NASA/RECON information retrieval system enables the terminal user to search the inverted files or indexes using desired terms. Search results could be the yield from a single set—or the combination of several sets resulting from Boolean operations of OR, AND, and NOT. A search is formulated and displayed on a video screen or teleprinter through Boolean interaction between or among sets. A live interplay between the analyst and the online file affords an expansion or narrowing of search results through optimization of the search strategy.

The user may order a complete printed record of search results by use of the PRINT command. Search results are printed offline on a high-speed Xerox 8700 Laser Printer at the NASA STI Facility overnight. The print is then mailed to the user the following morning.

User Support

Hotline Assistance. The NASA STI Facility provides an ongoing hotline telephone service to all users.

Hotline, located at the NASA STI Facility, monitors the daily performance of the online retrieval system.

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A user experiencing problems with the performance of the *NASA/RECON* system may alert hotline staff so that action may be taken to restore normal operations.

The hotline number is (301) 621-0300. The hotline assistance is available 8:00 A.M. to 8:00 P.M. daily, Monday through Friday, excluding holidays.

RECON/Reference Services. This service gives users direct access to RECON/Reference analysts who can provide specific, on-the-spot assistance to search-related problems. Analysts may be reached by calling (301) 621-0150 8:00 AM to 4:30 PM ET, Monday through Friday, excluding holidays.

User Guides. A series of user guides is available to serve the reference needs of all levels of users, novice to advanced.

- *NASA/RECON User's Reference Manual* is a comprehensive guide to the NASA STI Database and the retrieval system.
- *NASA/RECON Basic Reference Guide* is a ready reference tool designed to help the novice user to sign-on to the system and conduct a basic search. It also serves as a "memory jogger" for the experienced user.
- *NASA/RECON Primer* is an introduction to searching the NASA STI Database. It includes an overview of the database files as well as basic commands, search techniques, display of citations, and off-line printing.
- *NASA STI Bulletin* is a monthly newsletter that informs users about NASA's STI products and services.

Systems Enhancements. The Database Products and Services Branch of the NASA STI Division routinely evaluates *NASA/RECON* performance in order to identify and make improvements that will increase the effectiveness of the system. Users are informed of completed program improvements through the *NASA STI Bulletin*.

Express Delivery Service

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Example: ORDER 2///*EX* JOHN SMITH

The Making of the 1988 NASA Thesaurus*

by

Ronald L. Buchan, Lexicographer
NASA STI Facility

The NASA Thesaurus had its beginnings in the seven-page report entitled "Nomenclature for Aeronautics" first published by the National Advisory Committee for Aeronautics in 1916. The present NASA Thesaurus (NASA SP-7064) is three volumes and 1,440 pages.

The first volume is the basic volume and gives full hierarchies of each term. There are over 160,000 interrelationships developing out of 17,000 main entries and 4,000 use references. The second volume, the Access Vocabulary, consists of 40,000 entries and gives all permutations of term words excluding some articles, etc. It also gives access to embedded terms, i.e., listing chemistry as a cross reference to geo.chemistry. The third volume is a volume of definitions. This volume contains over 3,000 definitions, most of which are from standardized sources including ASTM, the Dept. of Energy, and NASA.

Products which use the NASA Thesaurus include SCAN (Selected Current Aerospace Notices) and UPDATE, both selective dissemination of information services. Publications which use NASA Thesaurus terms include STAR (Scientific and Technical Aerospace Reports), IAA (International Aerospace Abstracts), and COSMIC Software Catalog (NASA's Computer Software Management and Information Center at the University of Georgia). NASA Thesaurus terms are used in 25 NASA/RECON files containing over 3 million titles and 17 million postings. The distribution of postings to NASA Thesaurus terms is found in the semiannual NASA Combined File Postings Statistics. Many libraries and information centers other than NASA libraries use the NASA Thesaurus in information work since it is the virtual standard for aerospace terminology.

* Abstract of talk given at NFAIS at NLM, January 1989.

Notice to STI Bulletin Readers

If you have announcements or articles of general interest to the STI community or search techniques you would like to share with other NASA/RECON users please provide them to us. This is your publication and your input is vital to its success. Contact Jackie Streeks at the NASA STI Facility (301) 621-0105 or John Wilson at NASA Headquarters (202) 755-1246.

NASA/RECON Help Menu Revised

RECON/Reference Services staff at the STI Facility recently revised the main HELP menu to facilitate users' online access to information about RECON commands, files, and functions. Many old screens were deleted or updated, and some new screens were added. As before, users may display the main menu simply by entering HELP or H.

RECON users who need to access a HELP screen, but do not know the name of the screen or its corresponding number may get that information from the

main HELP menu. Entering HELP or H causes a menu to display, listing the names and numbers of nearly 80 HELP screens, some leading to sub-menus for access to more screens. Once users locate the specific screen desired, they may access it as in the following example:

Example: **HELP ACC RANGE** or **HELP x100**
H ACC RANGE or **H x100**

Below is the main RECON HELP menu, with newly added or recently revised items in bold type.

EXPLANATORY TEXT FOR XO

ACC-RANGE	-X100	FIELDS9	-X029	RANGE SEARCH	-X451	SEARCH COLL-P	-X032
ASRDI	-X017	FIELDS10	-X350	RECON	-X310	SEARCH COLL-Q	-X033
BEGIN	-X431	FIELDS11	-X351	RECON FAILURE	-X260	SEARCH COLL-R	-X034
CMD FORMATS	-X003	FIELDS12	-X352	RECON QUEUE	-X250	SEARCH COLL-T	-X035
COMBINE	-X433	FILE CONTENT-A	-X800	RECONST	-X011	SELECT	-X321
COMMAND STATUS	-X434	FILE CONTENT-B	-X802	RELEASE	-X319	SELECT OPTIONS	-X450
COMMANDS	-X330	FILE CONTENT-C	-X804	ROOT SEARCH	-X452	SET STATUS	-X322
CURRENT	-X435	FILE CONTENT-D	-X806	ROOT	-X320	SIGNOFF	-X323
DISPLAY	-X436	FILEINFO	-X013	SEARCH COLL-A	-X005	SIGNON	-X324
END	-X437	FREQUENCY	-X439	SEARCH COLL-B	-X006	SORT	-X325
ENEWS	-X010	GLOSSARY	-X400	SEARCH COLL-C	-X007	SPECIFY FORMAT	-X326
ERROR MESSAGES	-X360	HELP	-X300	SEARCH COLL-D	-X008	TEXT SEARCH	-X440
EXPAND	-X438	KEEP	-X311	SEARCH COLL-E	-X012	TRAINING	-X101
FIELDS	-X020	LIMIT	-X312	SEARCH COLL-F	-X015	TYPE	-X327
FIELDS0	-X030	LIMIT ALL	-X313	SEARCH COLL-G	-X014		
FIELDS1	-X021	LIMIT RELEASE	-X314	SEARCH COLL-H	-X016		
FIELDS2	-X022	NEWS	-X019	SEARCH COLL-I	-X017		
FIELDS3	-X023	NTIS	-X037	SEARCH COLL-J	-X002		
FIELDS4	-X024	ORDER	-X315	SEARCH COLL-L	-X018		
FIELDS5	-X025	PAGE	-X316	SEARCH COLL-M	-X004		
FIELDS6	-X026	PRINT	-X317	SEARCH COLL-N	-X808		
FIELDS7	-X027	QUERY	-X318	SEARCH COLL-O	-X031		
ENTER:							

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on NASA/RECON. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

ATMOSPHERIC GENERAL CIRCULATION
 MODELS

BROWN DWARF STARS

COMPUTER VIRUSES

GENERAL CIRCULATION MODELS
 (ATMOSPHERIC)

USE ATMOSPHERIC GENERAL
 CIRCULATION MODELS

GRAUPEL

ICE CLOUDS

MARS ROVER SAMPLE RETURN MISSION
 USE MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MAURITIUS

MEXICAN SPACE PROGRAM

NETHERLANDS SPACE PROGRAM

PROTEIN CRYSTAL GROWTH

QATAR

SEYCHELLES

SIS (SUPERCONDUCTORS)

SUPERCONDUCTOR INSULATOR
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New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Planetary Cartography in the Next Decade: Digital Cartography and Emerging Opportunities
(NASA TM-4092)

Planetary maps being produced today will represent views of the solar system for many decades into the future. The primary objective of the planetary cartography program is to produce the most complete and accurate maps from the hundreds of thousands of planetary images in support of scientific studies and future missions. This document emphasizes the utilization of digital techniques and digital data bases in response to recent advances in computer technology. (Avail:NTIS)

Propagation Effects Handbook for Satellite Systems Design—A Summary of Propagation Impairments on

10 to 100 GHz Satellite Links with Techniques for System Design (NASA RP-1082(04))

The *NASA Propagation Effects Handbook for Satellite Systems Design* provides a systematic compilation of the major propagation effects experienced on space-Earth paths in the 10-100 GHz frequency band region. It provides both a detailed description of the propagation phenomena and a summary of the impact of the effect on communications system design and performance. (Avail:NTIS)

STI Bulletin is distributed to established users to inform them about NASA's scientific and technical information products and services.

Suggestions, material to be considered for inclusion, and comments may be directed to Jackie Streeks at the above address or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT-2, Washington, DC 20546, (202) 755-1246.

RECON operational problems may be directed to the RECON Coordinator at:

NASA STI Facility
P.O. Box 8757
B.W.I. Airport, MD 21240
(301) 621-0300

Detach label with instructions for address or distribution change and mail to: ATTN: Registration Services, NASA STI Facility.

Focus On...

This month the Bulletin will focus on several online referral and/or bibliographic files for which there is not a corresponding published version, unless otherwise noted.

NASA Research and Development Contract Search File

The NASA Research and Development Contract Search (R&DCS) File (K10,000 series) contains information about NASA R&D contracts, grants, and orders issued since January 1, 1971. Information in the file is available as a supplement to the on-going research information contained in the *Research and Technology Objectives and Plans (RTOPs) Summary (W70,000 series)*.

Scope

The *Research and Development Contract Search File* contains information on contracts and grants issued since January of 1971. The file contains records of contracts or grants currently in force and contracts or grants that have expired or have been terminated.

Record data: Each R&DCS record is comprised of the following standard data elements.

- Contract/grant number
- Contract/grant title
- Name and address of contractor/grantee
- Inclusive dates of the contract/grant period
- Name and business address of the NASA technical monitor
- Cognizant NASA installation
- Sponsoring NASA Headquarters office
- RTOP number
- Security classification of the work
- Name of principal investigator
- Technical reporting requirements for the work
- Dun and Bradstreet Number
- Contractor Identification Code
- Technical reports produced under the contract/grant
- Modification Numbers

Subject terms derived from the title and statement of work to describe the contract scope and substance.

Availability

The NASA Research and Development Contract Search File is accessible on NASA/RECON as the K10,000 series in File Collections B, C, D, E, N, O, and P to all registered users.

(continued on page 2)

Document Ordering Via FAX

For registered users who may not have access to NASA/RECON and its online order capability, the NASA Scientific and Technical Information Facility now offers the option of telefaxing document order requests. Telefaxing affords a convenient and expedient alternative to mailing document requests. Orders will be received at the NASA STI Facility almost instantaneously, eliminating the unavoidable time spent by a request in transit via the US mail.

Fax requests must include your Facility User ID, organizational telephone number, the title of the desired document and any pertinent bibliographic information (i.e., accession number, report number, author) available. For NASA Tech Briefs and Technical Support Packages, continue to write or phone the Technology Utilization Office at (301) 621-0243.

If NASA/RECON is available, online ordering is still the most expeditious method of relaying document requests. If NASA/RECON is not an available option, telefaxing can be a viable alternative. Of course, users may still phone (301) 621-0147 to place an order.

To take advantage of this speedy method of transmission, send requests to the attention of Document Request Services. The NASA STI Facility Fax telephone number is (301) 621-0134.

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NACA Historical Shelflist

The *NACA Historical Shelflist (H10,000 series)* is an online version of a collection of over 100,000 cards, covering the period from approximately 1915 through the early 1960's. This card collection served as the National Advisory Committee for Aeronautics (NACA) Headquarters Library shelflist.

Scope

Along with NACA reports the card collection references reports of other U.S. government agencies, U.S. industry, foreign government agencies and industry, including British, German, and Scandinavian. The collection is located at the NASA Scientific and Technical Information Facility where it has served as a reference source. Renewed interest in the basic aeronautical research represented by these documents and the many development projects underway in subsonic, transonic, and supersonic flight that could benefit made it imperative that the file be made more generally available. Making it accessible on *NASA/RECON* has been jointly supported by the NASA Headquarters Aeronautics Division (OAST) and the Scientific and Technical Information Division.

The information contained in the file was extracted from approximately 100,000 of the NACA shelflist cards and not source documents. Also, the information was not formatted to correspond to pre-existing cataloging standards. Therefore, this file has several unique characteristics which differentiate it from other files. These include:

Subject terms are not taken from the NASA Thesaurus, but are extracted from the catalog cards. For the most part the terms used are consistent with the *Subject Headings for Index of NACA Publications*.

Corporate Name entries do not correspond to the *Corporate Source Authority List*.

All *text* fields, i.e., the title, the corporate name, the miscellaneous notes, shelflist number, and the abstract, are single-word searchable using the mnemonic TXT. These fields can be searched simultaneously using only one command.

The *Publication Date* is an 8-character value in the fixed form of *yyyymmdd*, i.e., 19251024. This format permits clarification of dates entered for documents produced prior to 1900. This field is term searchable using the mnemonic PDT.

Record data: Each record is comprised of 10 standard data elements:

Accession Number	Miscellaneous Notes
Report Number	Subject Terms
Publication Date	Abstract
Pagination	
Title	
Author	
Shelflist Number	

Availability

The *NACA Historical Shelflist* is accessible to registered users of *NASA/RECON* as the *H10,000 series* in File Collection T. Although the records are fully-searchable online, the documents currently are not available for purchase through online ORDERing. Users must call the NASA STI Facility to place document orders.

Directory of Numerical Databases

The *Directory of Numerical Databases (DND) (F10,000 series)* is an online referral directory of selected numerical, imagery, and textual databases funded or administered by NASA.

Scope

The *DND* describes over 1200 databases of interest to the aerospace research community. Over 50% of the references relate to imagery and numerical data acquired by satellites and interplanetary spacecraft; another 40% describe Space Shuttle aerothermodynamic test data; and the remainder cover materials, chemical properties, and meteorology.

Record data: Each *DND* record is comprised of the following standard data elements:

- Database name and acronym*
- Technical program name and acronym*
- Data description abstract*
- Data collection method*
- Geographic coverage (if applicable)*
- Contract/grant number*
- Contractor and generating organization*
- NASA Center submitting information*
- Principal investigator*
- Contact name and phone number*
- Associated documentation (report numbers)*
- Timespan of data (if applicable)*

Availability

The *Directory of Numerical Databases* is accessible on *NASA/RECON* as the *F10,000 series* in File Collection Q to all registered users.

Stretching Your Travel Budget—RECON Training Classes Rescheduled

Since many users are faced with tight travel budgets, it is frequently difficult for them to attend NASA/RECON training sessions held at the NASA STI Facility. In order to help stretch users' travel dollars, we have rescheduled two of the Fall 1989 training classes to coincide, but not conflict, with the upcoming annual DTIC Users' Conference.

The Basic NASA/RECON training class previously scheduled for Thursday, October 19, has been rescheduled for Friday, October 27. The Wednesday, November 15 Advanced session has been moved to Friday, November 3. Both classes will be held at the NASA STI Facility near the BWI Airport as originally planned. The DTIC Conference, scheduled for October 28 through November 2, will be held in Alexandria, Virginia.

Users who plan to attend the DTIC Conference can take advantage of this opportunity to attend NASA/RECON training while in the area, extending travel money and adding to travel justification.

For information about other scheduled NASA/RECON training classes, type HELP TRAINING on-line, or call (301) 621-0150.

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on NASA/RECON. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

APPLICATION SPECIFIC INTEGRATED CIRCUITS

ARGENTINE SPACE PROGRAM

ASIC

USE APPLICATION SPECIFIC INTEGRATED CIRCUITS

BIRKELAND CURRENTS

CUSTOM INTEGRATED CIRCUITS

USE APPLICATION SPECIFIC INTEGRATED CIRCUITS

ENDEAVOUR (ORBITER)

EVA

USE EXTRAVEHICULAR ACTIVITY

LEARNING MACHINES

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LEARNING MACHINES

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New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The NTIS price code, accession number, and the GPO order number are given, where available, with the descriptions.

Probabilities and Statistics for Backscatter Estimates Obtained by a Scatterometer with Applications to New Scatterometer Design Data (NASA CR-4228)

The values of the Normalized Radar Backscattering Cross Section (NRCS) σ^0 , obtained by a scatterometer are random variables whose variance is a known function of the expected value. The probability density function can be obtained from the normal distribution. The expected value is obtained as a function of the properties of the waves on the ocean and the winds that generated the waves. Point estimates of the expected value, σ_{est}^0 , are found from various statistics given the parameters that define the probability density function for each value. Random intervals are derived with a preassigned probability of containing the value, σ_{est}^0 . A statistical test to determine whether or not successive values of σ^0 are truly independent is derived. The maximum likelihood estimates for wind speed and direction are found, given a model for backscatter as a function of the properties of the waves on the ocean. These estimates are biased as a result of the terms in the equation that involve natural logarithms, and calculations of the point estimates of the maximum likelihood values are used to show that the contributions of the logarithmic terms are negligible and that the terms can be omitted. (Avail:NTIS)

NASA Directions in Space Propulsion for 2000 and Beyond (NASA TM-102281)

In his National Space Policy of 1988, President Reagan set a goal to expand human presence and activity in the solar system. This goal has provided the impetus for a resurgence of activity in a broad range of space technology efforts in general and for a number of propulsion technology programs in particular. Building on recommendations from several detailed studies of the U.S. space program, NASA has increased the level of investment in propulsion technology development. The Civil Space Technology Initiative is developing propulsion technology in support of near-Earth operations. These efforts are focused on both main and booster engines and seek to provide design methods and databases to support future development of low cost, reliable transportation systems. (Avail:NTIS)

(continued on page 4)

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New Publications (continued from page 3)

Nutritional Models for a Controlled Ecological Life Support System (CELSS): Linear Mathematical Modeling (NASA CR-4229)

NASA's Controlled Ecological Life Support System (CELSS) Program is developing a bioregenerative life support system to supply food, air, and water to space crews on long duration missions. An important part of this effort is development of the knowledge and technological capability of producing and processing foods to provide optimal diets for space crews. This involves such interrelated factors as determination of the diet, based on knowledge of nutrient needs of humans and adjustments in those needs that may be required as a result of the unique conditions of long-duration spaceflight; determination of the optimal mixture of crops required to provide nutrients at levels that are sufficient but not excessive or toxic; and consideration of the critical issues of spacecraft space and power limitations, which impose a phytomass minimization requirement. This publication examines the complex interactions among these factors, with the goal of supplying a diet that will satisfy human needs while minimizing the total phytomass requirement. The approach taken was to collect plant nutritional composition and phytomass production data, identify human nutritional needs and estimate the adjustments to the nutrient requirements likely to result from spaceflight, and then to generate mathematical models from these data.

(Avail:NTIS)

Seventeenth NASTRAN Users' Colloquium (NASA CP-3029)

This document is the proceedings of a colloquium and contains technical papers contributed during the Seventeenth NASTRAN Users' Colloquium held in San Antonio, Texas, April 24-28, 1989. The authors review general application of finite element methodology and the specific application of the NASA Structural Analysis System, NASTRAN, to a variety of static and dynamic structural problems.

(Avail:NTIS)

STI Bulletin is distributed to established users to inform them about NASA's scientific and technical information products and services.

Suggestions, material to be considered for inclusion, and comments may be directed to Jackie Streeks at the address below or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT-2, Washington, DC 20546, (202) 755-1246.

RECON operational problems may be directed to the RECON Coordinator at:

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STI Bulletin

Scientific and Technical Information

Volume XIX, No. 7

Scientific and Technical Information Division

Aug./Sept. 1989

New Special Publication Coincides with 20th Anniversary of Apollo 11

This second edition of *Orders of Magnitude, A History of the NACA and NASA, 1915-1990* was published to coincide with and to commemorate the twentieth anniversary of the Apollo 11 mission. This volume brings up to date the history of U.S. agencies for space exploration, the NACA and the NASA. Early aviation and aeronautics research are described, with particular emphasis on the impact of the two world wars on aeronautics development and the postwar exploitation of those technologies. The reorganization and expansion of the NACA and NASA is described in detail as well as NASA's relationship with industry, the university system, and international space agencies such as the European Space Agency (ESA).

The dramatic 'space race' during the 1950s and 1960s is recounted through a detailed history of the Gemini and Apollo programs and followed by a discussion of the many valuable social/scientific applications of aeronautics technologies, many of which have been realized through the launching of successful satellite projects. The solar system explorations of the Voyager missions are described, as is the Challenger tragedy and the 1988 return to space of the Shuttle program. Future plans are outlined for a cooperatively funded

international space station to foster the ongoing study of space science.

This addition to the NASA History series offers a readable blend of the dates, facts, and technical elements of aeronautics history and lively accounts of the personalities and philosophies behind the national space program.

Orders of Magnitude will be available on NASA Spacelink. Conceived and implemented by NASA Headquarters Educational Affairs Division and the Marshall Center Public Affairs Office, NASA Spacelink is an educational database designed to be used by teachers throughout the country. In addition to historical information, the system contains current NASA news releases, shuttle processing reports, lesson plans and other materials useful to teachers. It is available to anyone with a computer and a modem for just the cost of a telephone call. NASA users can also access NASA Spacelink using their NPSS accounts (the service name is SPLINK) or by dialing (205) 895-0028.

(Avail:GPO \$6.00;
GPO Stock No. 033-000-01053-2)

Focus On...

Each issue of the *STI Bulletin* features a product or service available through the STI Facility. This month the *STI Bulletin* will focus on NASA's Technology Utilization (TU) Office, located at the NASA STI Facility, the NASA Headquarters' Office of Commercial Programs and, in particular, the Technology Utilization Division which provides low or no cost services to the user community. The TU Program is designed, in a comprehensive nationwide network, to increase public and private sector benefits by broadening and accelerating the secondary application of aerospace technology. This twice-used technology represents an added dividend to the national investment in the space program and increased national productivity. The products and services provided by the TU Office are available to the U.S. engineering and scientific community as well as other domestic professionals interested in technology utilization. They supplement the mechanism of technology transfer exercised by the elements of the TU Network.

COSMIC Software Catalog

NASA's Computer Software Management and Information Center is the central office established to distribute software developed with NASA funding. The *COSMIC Software Catalog* contains descriptions of the computer programs available for use within the United States as of January of the issue date.

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Introducing *RECON II*

Major Enhancements Planned For *NASA/RECON*

Since 1969, searchers have seen the *NASA/RECON* system changed, improved, expanded, and enhanced. But the twenty plus year old retrieval software never has had a complete overhaul. Implementation of a new version, *RECON II*, is planned for early 1990.

RECON II will offer many capabilities that users have requested over the years, that are not provided by the current version, as well as some not found in other commercially available retrieval systems. Using command language influenced by the National Information Standards Organization (NISO), *RECON II* will allow both frequent and occasional users to search more easily the NASA STI Database.

New Features

Some of the additional capabilities planned for *RECON II* will allow users to:

- FIND (SELECT) a term or text string in combination with an existing set, saving time and keystrokes.

Example: FIND airfoils AND s1

- customize *RECON* to their needs through user-defined file collections, search mnemonics, and output tags.

Example: MNEMONIC auth

- SCAN (EXPAND) an index within a user-customized search environment, and see the postings for that environment only, as opposed to the entire database. Searchers then can better gauge the number of hits that will result from a FIND command.

- search without limitations currently imposed by *RECON* such as 1,539 citations to a KEEP set or 100 sets to a search, for increased flexibility.
- SAVE a completed search, and modify or execute a saved search with ease. This eliminates the need to rekey a good strategy because the user was not in query mode.

Many other changes are planned for *RECON II*. These are primarily geared toward increased searching flexibility and ease of use. Of course, popular functions currently available will be retained.

User Assistance

An online interactive tutorial for *RECON II* is planned for later implementation. Help screens, a complete error messaging system, and strategy, command, and telecommunications assistance will continue to be available by telephone. A schedule for *RECON II* training classes will be released later this year.

Information about specific *RECON II* functions will appear in future issues of the *STI Bulletin* and will be mailed to all STI registrants as it becomes available. New user documentation will be issued to *RECON* subscribers, and periodic messages will appear on the HELP NEWS screen currently available on *RECON*. All of these measures are designed to ensure a successful transition to *RECON II* by all users, frequent and occasional.

Focus On...

(continued from page 1)

Scope

The *Catalog* is the major reference on NASA-developed software. However, on request, the COSMIC staff will review the database to determine whether programs for your applications have been made available since the catalog's publication. The information found in the *Catalog* is available on *NASA/RECON* as the M10,000 series. This file includes abstracts and indexes for the current year only. The first section of the *Catalog* contains citations and abstracts for each of the computer programs. The entries in the abstract section are arranged by the 76 categories found in *STAR*. Four indexes are included: keyword, author, program number/accession number, and accession number. The *NASA Thesaurus* is used as the authority for the keywords; however, other subject term entries are also available.

Frequency

The *COSMIC Software Catalog* is issued annually. Each issue supersedes the previous issue.

Availability

The *COSMIC Software Catalog* is available from COSMIC, Athens, Georgia 30603, at \$25.00 per copy. Approximately 1400 computer programs and related documentation announced in the *Catalog* are also available from COSMIC. An order form is provided in the *Catalog*. Some of the computer programs are available for use within the domestic United States only.

NASA Tech Briefs

NASA Tech Briefs is both a current awareness medium and a problem solving tool. Tech briefs are short announcements of new technology derived from the research and development activities of the National Aeronautics and Space Administration.

Scope

The NASA Office of Commercial Programs issues approximately 500 tech briefs each year in the monthly publication, *NASA Tech Briefs*. These briefs emphasize information considered likely to be transferable across industrial, regional, or disciplinary lines and are issued to encourage

(continued on page 3)

Document Delivery by FAX

To expedite the receipt of a document ordered from the STI Facility, a trial FAX document delivery service was initiated September 1, 1989. This is a six-month pilot study to determine appropriate procedures and the demand for the new service.

How To Use

To request FAX document delivery, phone Document Request Services at (301) 621-0147. Be prepared to provide bibliographic information, i.e., title, report number, accession number, and your STI Facility User ID, organization telephone number and FAX telephone number. All orders received requesting FAX delivery are treated as RUSH orders. They are processed and FAXed within 24 hours of receipt at the STI Facility. Do not mail, FAX, or ORDER online requests for documents you wish to have delivered by FAX.

It is not possible to FAX classified or limited distribution documents.

User Charges

Documents are priced according to current NTIS pricing schedules, available in a recent issue of *STAR* and on *RECON* by entering HELP NTIS. For FAX service,

Focus On...

(continued from page 2)

commercial application. They announce potential products, industrial processes, basic and applied research, shop and lab techniques, computer software, new sources of data, concepts, etc. resulting from the secondary application of aerospace technology. A second publication, the *Index to NASA Tech Briefs*, is an annual listing of tech briefs issued by the NASA Office of Commercial Programs, Technology Utilization Division. The index contains an abstract/citation section and four indexes: subject, personal author, originating center, and tech brief number. The entries are arranged according to the nine categories especially developed for *NASA Tech Briefs*. The *NASA Thesaurus* is used as the authority for the indexing vocabulary that appears in the subject index.

Frequency

NASA Tech Briefs is issued monthly. The *Index to NASA Tech Briefs* is issued annually, covering items released during the preceding year. Also, every five years a cumulative index is prepared.

Availability

NASA Tech Briefs is distributed, free of charge, to engineers in U.S. industry and to other domestic technology transfer agents. Send requests for either the individual tech briefs or the monthly publication to Manager, Technology Utilization Office, NASA STI Facility, P.O. Box 8757, BWI Airport, MD 21240. The *Index to NASA Tech Briefs* is also available upon request from the NASA STI Facility, at \$10.00 per copy. *(continues next month)*

add \$10 for the first 30 pages and \$2 for each additional 10 pages.

Facsimile transmission of large documents can be costly. Also, the STI Facility may encounter difficulties transmitting to Group 1 or 2 facsimile machines.

Other RUSH Handling

For those who require overnight delivery service but do not have access to a FAX machine or when the cost is prohibitive, phone in your request and have the STI Facility provide delivery via Federal Express (standard Federal Express rates apply).

Other Services

You may request Federal Express handling using the online ORDER command on *NASA/RECON*, by mail, or by FAX for less time critical orders. To use the online ORDER command, enter ****FED EX**** in the attention line of the ORDER command. For example:

ORDER 89N11553/HC/1/**FED EX**

FAX and FED EX delivery charges will be reflected on your monthly invoice. Don't forget that you also may place non-RUSH orders via FAX. With all FAX orders include your STI Facility User ID, organizational telephone number, and bibliographic information, i.e., title, report number, and accession number. The STI Facility FAX number is (301) 621-0134. If you have access to *NASA/RECON*, we recommend that you place your order online as the most expedient method for the STI Facility to process your order.

Remember, all orders to be delivered via facsimile transmission are handled as RUSH orders, and must be received as telephone requests, NOT by FAX, mail, or online.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The GPO order number, the NTIS price code, and the NASA accession number are given, where available, with the descriptions.

NASA Scientific and Technical Publications: A Catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1988
(NASA SP-7063(03))

This Catalog provides bibliographic citations, abstracts, and related indexes of the 179 NASA scientific and tech-

(continued on back page)

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Space Administration
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New Publications (continued from page 3)

nical publications announced in the NASA scientific and technical information database during accession year 1988. The entries are grouped by the 76 subject categories found in STAR, and subject, personal author, and NASA report number indexes are included. This 58-page paper-bound volume is intended for wide distribution among present and potential users of NASA scientific and technical documents. This is the second supplement to the 10-year cumulation published in 1987.

(Avail:NTIS, no cost, refer to PR849)

Where No Man Has Gone Before: A History of Apollo Lunar Exploration Missions (NASA SP-4214)

A narrative account of the development of the science program for the Apollo lunar landing missions is presented. Emphasis is placed on the interaction between scientific interests and operational considerations in such matters as landing site selection, choice of experiments and planning of lunar surface activities, selection and training of crews, quarantine and back-contamination control, and presentation of results from scientific investigations.

(Avail:GPO for \$19.00;
GPO Stock No. 033-000-01047-8)

RECON Training Rescheduled

The Fall session of *RECON* training has been rescheduled to coincide with the annual DTIC User's Conference:

Basic—October 27
Advanced—November 3

For more information, enter HELP TRAINING online, or call (301) 621-0150.

The ***STI Bulletin*** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Jackie Streeks at the address below or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT-2, Washington, DC 20546, (202) 755-1246.

Direct *RECON* operational problems to the *RECON* Coordinator at:

NASA STI Facility
P.O. Box 8757
B.W.I. Airport, MD 21240
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address, ATTN: Registration Services.

Focus On...

Each issue of the *STI Bulletin* features a product or service available through the STI Facility. This month the *Bulletin* continues its focus on NASA's Technology Utilization (TU) Office, located at the NASA STI Facility, the NASA Headquarters' Office of Commercial Programs and, in particular, the Technology Utilization Division which provides low or no cost services to the user community. The TU Program is designed, in a comprehensive nationwide network, to increase public and private sector benefits by broadening and accelerating the secondary application of aerospace technology. This twice-used technology represents an added dividend to the national investment in the space program and increased national productivity. The products and services provided by the TU Office are available to the U.S. engineering and scientific community as well as other domestic professionals interested in technology utilization. They supplement the mechanism of technology transfer exercised by the elements of the TU Network.

Space Commercialization Database (SCD)

The *Space Commercialization Database (SCD)* is an on-line bibliography covering the technical, business, and popular literature of space commercialization and microgravity applications.

Scope

The *SCD* contains citations to books, technical reports, conference presentations, periodical articles (including professional journals, business and popular periodicals, and newspapers and newsletters), and patents—worldwide—on the industrialization of space and on microgravity applications. Selected trade newsletters and magazines are indexed on a cover-to-cover basis.

The *Space Commercialization Database* complements, but, with rare exceptions, does not duplicate, *STAR*, *IAA*, and other *NASA/RECON* items. Online database creation began in 1986, although some *SCD* items date from the 1960s. Creation of the database was jointly supported by the NASA Office of Commercial Programs, Technology Utilization Division and NERAC, Inc. A subset of the *SCD* corresponds in part to the annual bibliography series, *Microgravity Science and Applications*.

Size and Frequency

At present the *SCD* contains over 8,500 items. It is updated monthly, with approximately 150 to 200 new records per update.

Availability

The *SCD* is accessible on *NASA/RECON* as the *C10,000 series* in File collections J and D. It is also accessible via NERAC, Inc.

Spinoff

Spinoff, an annual publication, is devoted to secondary benefits from aerospace research and development programs. *Spinoff* is intended to foster increased awareness on the part of the general public of the practical benefits resulting from government sponsored aerospace research and development and of the aerospace technology available for transfer. It also presents a synopsis of the agency's major mission oriented programs and an overview of the elements of the Technology Utilization Network. *Spinoff* is published annually and is available, free of charge, from the TU Office, NASA STI Facility.

Color Copies Available

The STI Facility now has the capability to reproduce color pages from hardcopy documents. Since black-and-white copies of most color photographs, charts, etc. are virtually useless, this new capability will improve the quality and usefulness of the reproduced document. Due to the special handling required to produce the color copies, we will contact you to indicate the anticipated delay in processing. This delay will vary dependent upon the number of color pages to be copied. For further information, contact Document Request Processing at the Facility, (301) 621-0147.

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NASA/RECON File Directory

For your use, we have prepared a revised list of accession series (files) currently available on NASA/RECON. Column one indicates the accession series. Column two shows the File Name and acronym, as appropriate. Column three gives the accession years covered in the file. Column four shows the file collections in which each series is available.

<i>Accession Series</i>	<i>File Name</i>	<i>Coverage</i>	<i>File Collections</i>
A-10,000	International Aerospace Abstracts (IAA)	1968-DATE 1963-67	A,B,D,N,O,P G,H
A-80,000	Aerospace Medicine and Biology Bibliography	1964-69	G,H
B-10,000	NASA Tech Briefs	1963-DATE	B,D,N,O,P
C-10,000	Space Commercialization	1986-DATE	D,I
	Aerospace Safety Research and Development Institute (ASRDI)	1975-76	D,I,N,O,P
D-10,000	— Fire Technology		
D-30,000	— Cryogenic Fluids		
D-50,000	— Mechanics of Structure Failure		
F-10,000	Directory of Numerical Databases (DND)	1983-DATE	Q
H-10,000	NACA Historical File	1915 +	T
K-10,000	Research and Development Contract Search (R&DCS)	1972-DATE	B,C,D,E,N,O,P
M-10,000	Computer Software Management and Information Center (COSMIC)	Current Year Only	B,D,N,O,P
N-10,000	Scientific and Technical Aerospace Reports (STAR)	1968-DATE 1962-67	A,B,D,N,O,P G,H
N-60,000	Index of NASA Technical Publications with Abstracts Technical Publications Announcements	1962	G,H
N-70,000	Older Scientific and Technical Aerospace Reports Extended	1968-DATE	B,D,N,O,P
N-80,000	Older Scientific and Technical Aerospace Reports	1963-1967	G,H
N-90,000	Documents for Record Only	1963-DATE	G,H
T-10,000	DTIC Work Unit File (DWUF)	Current Year Only	E
U-50,000	NASA Library Network Periodicals (NALNET)	1973-86	M
V-10,000	NASA Library Books (NALNET)	1972-86	F,N,P
W-70,000	NASA Research and Technology Objectives and Plans (RTOP)	1971-DATE	B,D,E,N,O,P
X-10,000	Limited Scientific and Technical Aerospace Reports	1968-DATE	D,N
	Classified Scientific and Technical Aerospace Reports	1962-67	G
X-36,000	Preview File	1988-DATE	D,N
X-50,000	Classified STAR Secret Supplement	1964-70	G
X-70,000	Older Classified Scientific and Technical Aerospace Reports Extended	1968-DATE	D,N
X-80,000	Older Classified Scientific and Technical Aerospace Reports	1963-67	G
X-90,000	Classified Documents for Record Only	1963-DATE	G
Y-10,000	NASA Safety Databases (for access contact NASA Headquarters Safety Office)	1983-DATE	R

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on *NASA/RECON*. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

ATMOSPHERIC SEEING
USE SEEING (ASTRONOMY)
BLOWOFF (COMBUSTION)
USE FLAMEOUT
BURAN SPACE SHUTTLE
CAMBRIAN PERIOD
CENOZOIC ERA
CHAOS
SN (LIMITED TO PHYSICS)
Scope Note deleted
CRETACEOUS PERIOD
CRETACEOUS-TERTIARY BOUNDARY
CVD (DEPOSITION)
USE VAPOR DEPOSITION
ECOLOGICAL SYSTEMS
USE ECOLOGY
Deleted
ECOLOGICAL SYSTEMS
USE ECOSYSTEMS
FLUX TRANSFER EVENTS
HAIRPIN VORTICES
USE HORSESHOE VORTICES
HORSESHOE VORTICES
HUNGARIAN SPACE PROGRAM
K-T BOUNDARY
USE CRETACEOUS-TERTIARY BOUNDARY
LASER DIODES
USE SEMICONDUCTOR LASERS
LIGHT HELICOPTERS
MAN TENDED FREE FLYERS
MASER MATERIALS
MASER PUMPING
MESOZOIC ERA
MOONLETS
MTFF (SPACE STATION)
USE MAN TENDED FREE FLYERS
NEPTUNE SATELLITES
NEREID
NEW ZEALAND SPACE PROGRAM
PALEOZOIC ERA
PROPELLER NOISE
RECORDS MANAGEMENT
ROTATIONAL SPECTRA

ROTORDYNAMICS
USE ROTOR DYNAMICS
ROTOR DYNAMICS
SEEING (ASTRONOMY)
SPACECRAFT COMPUTERS
USE AIRBORNE/SPACEBORNE COMPUTERS
SPACECRAFT ENVIRONMENTS
Scope Note Change
SN (LIMITED TO SPACECRAFT INTERNAL
COMPARTMENTS AND CABINS; FOR
SPACECRAFT EXTERNAL ENVIRONMENTS
REFER TO 'EXTRATERRESTRIAL
ENVIRONMENTS')
STARQUAKES
TERTIARY PERIOD
TOTAL VARIATION DIMINISHING SCHEMES
USE TVD SCHEMES
TRANSPUTERS
TRAPPED VORTEXES
Transferred to TRAPPED VORTICES
TVD SCHEMES
UARS (SATELLITE)
USE UPPER ATMOSPHERE RESEARCH SATELLITE
UPPER ATMOSPHERE RESEARCH SATELLITE
VECTOR PROCESSING (COMPUTERS)
VECTOR QUANTIZATION

New Publications

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Reports of Planetary Astronomy, 1989 (NASA TM-4120)
Abstracts of reports from Principal Investigators funded through NASA's Planetary Astronomy Program, Office of

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New Publications (continued from page 3)

Space Science and Applications provide a summarization of work conducted in this program for 1989. Each abstract contains a brief statement on the strategy of investigation and lists significant accomplishments within the area of the funded grant or contract, plans for future work, and publications.

(Avail:NTIS)

NASA Information Sciences and Human Factors Program—Annual Report, 1988 (NASA TM-4126)

This report contains FY 1988 descriptions of technical accomplishments in seven sections: automation and robotics, communications systems, computer sciences, controls and guidance, data systems, human factors, and sensor technology.

(Avail:NTIS)

Planetary Geosciences—1988 (NASA SP-498)

This book has just been published by the Scientific and Technical Information Division and the Office of Space Science and Applications. The reader will find here a collection of the outstanding research topics in the NASA Planetary Geosciences Program, covering a broad range of activity in the fields of planetary geology, geophysics, materials, and geochemistry.

This illustrated paperbound volume of 114 pages should appeal to NASA managers and to the general public as well as to planetary geoscientists.

(Avail:GPO for \$13.00;
GPO Stock No. 033-000-01055-9)

Thermal Protection System of the Space Shuttle (NASA CR-4227)

One of the most important and successful accomplishments of the National Aeronautics and Space Administration, the thermal protection system (TPS) introduced and continues to incorporate many of the advances in materials development over the past two decades. This comprehensive, single-volume provides a summary of the space shuttle's thermal protection system (TPS). The review includes system design rationales, key design features, and broad descriptions of the subsystems of TPS (e.g., reusable surface insulation, leading edge structural and penetration subsystems). Details of all elements of TPS development are covered—materials properties, manufacturing, modeling, testing, installation, and inspection. Disclosures and inventions are listed and potential commercial application of TPS-related technology is discussed.

(Avail:NTIS)

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B.W.I. Airport, MD 21240
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address, ATTN: Registration Services.

Focus On...

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the STI Bulletin will focus on:

Literature Search Service

For researchers who do not have online access to the NASA STI Database through *NASA/RECON*, the NASA STI Facility provides individual literature searches on request for a fee. This fee is waived, however, for NASA organizations.

Scope

NASA STI Database. The entire NASA STI Database is available for search—including references to all documents announced in *STAR* and *IAA* and to all unannounced documents in the NASA collection through *NASA/RECON*. *NASA/RECON* is a computerized, online, interactive system for information search and retrieval. It enables registered users at remote locations to interact directly with the NASA STI Database. References to classified and limited distribution documents are provided to requesters based on their registered organizational affiliation with the NASA STI Facility.

Other Databases. The NASA STI Facility has direct access to the Defense RDT&E Online System (DROLS), ORBIT Search Service, DIALOG Information Services, Inc., BRS Search System, and Pergamon Infoline. Literature searches on these services are only available upon request to NASA organizations.

Search Processing. Individual searches are performed for a fee by retrieval specialists at the NASA STI Facility in response to written requests from registered users. Printed search request forms are available at the library or technical information center in all registered user organizations. As a requester, you are asked to specify the object of your search, the segments of the database you would like to have queried, and any keywords or document references you think may be pertinent. The

retrieval specialist formulates an individual strategy for your search, consulting with you by telephone if necessary to clarify your information needs.

The specialist requests a computer printout of the search results, which is mailed to you, together with information about the availability of the documents identified by the search.

Response Time. Turnaround time for this service averages less than four days. In an emergency, telephone requests can be processed more quickly.

Availability

NASA and Affiliates. NASA literature searches are available for a fee to employees of NASA contractor organizations, organizations involved in research related to the NASA mission, and other Government agencies that have registered with the NASA STI Facility to receive this service.

NASA employees at installations where *NASA/RECON* is available should request search assistance from the staff at their local technical library.

General Public. The STI Facility does not provide literature search service to the public. Portions of the NASA STI Database are, however, publicly available from ten NASA-sponsored Industrial Applications Centers throughout the United States.

All documents announced in *STAR* and *IAA* since 1962 are available as The Aerospace Database (File 108) through DIALOG.

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RECON II: Frequency Power

This article is part of a continuing series to provide readers with information about *RECON II*, the upgraded retrieval software scheduled to be released in Spring 1990.

Under the current version of *RECON*, users have for years enjoyed the availability of the *FREQUENCY* command to aid them in analyzing sets. This feature, which is nearly unique to *RECON*, rank-orders the terms indexed in a sample of citations within a given set, and displays them by frequency of occurrence.

Once *RECON II* is operational in Spring 1990, the *FREQUENCY* command's function will be greatly expanded. In addition to analyzing subject terms, *FREQUENCY* will analyze and rank-order information in other fields such as author, contract number, corporate source, or any other field. In

the event that no field is identified for analysis, *RECON* will default to the subject terms.

To use the *FREQUENCY* command for other fields, enter:

FREQUENCY (Set number) (Field Mnemonic)

Example:

FREQUENCY S1 AU

This will display a sample of the authors cited in set 1 in order of frequency of occurrence, with each given an F-number. Selections can then be retrieved by using the F-number.

Remember, the expanded version of *FREQUENCY* will not be available until Spring of 1990 when *RECON II* is implemented. Until then, the *FREQUENCY* command will continue to aid you in analyzing subject terms within your sets. (See the sample screen below.)

REF	SUBJECT TERM	FREQ		
F001	INFORMATION	0443	F022	COMMUNICATING
F002	DATA PROCESSING	0055	F023	COMMUNICATION
F003	INFORMATION SYSTEMS	0052	F024	DATA TRANSMISSION
F004	INFORMATION DISSEMINATION	0041	F025	MANAGEMENT PLANNING
F005	DATA BASES	0037	F026	SPACE COMMERCIALIZATION
F006	COMPUTER PROGRAMS	0035	F027	TABLES (DATA)
F007	INFORMATION MANAGEMENT	0034	F028	USER REQUIREMENTS
F008	MATHEMATICAL MODELS	0034	F029	DOCUMENTATION
F009	CONFERENCES	0032	F030	MAN MACHINE SYSTEMS
F010	DECISION MAKING	0032	F031	PROJECT MANAGEMENT
F011	LIBRARIES	0028	F032	RESEARCH AND DEVELOPMENT
F012	INFORMATION RETRIEVAL	0027	F033	SYSTEMS ANALYSIS
F013	DATA ACQUISITION	0021	F034	TECHNOLOGIES
F014	HUMAN FACTORS ENGINEERING	0021	F035	CODING
F015	DISPLAY DEVICES	0020	F036	HUMAN PERFORMANCE
F016	ECONOMICS	0019	F037	INFORMATION FLOW
F017	INFORMATION THEORY	0019	F038	MANAGEMENT INFORMATION SYS
F018	ALGORITHMS	0018		TEMS
F019	BIBLIOGRAPHIES	0018	F039	RESEARCH
F020	COMPUTERS	0018	F040	UNITED STATES
F021	EVALUATION	0018	F041	AUTOMATIC CONTROL
			F042	TECHNOLOGY TRANSFER

ENTER: MORE

Gladys A. Cotter - STID Director

Gladys A. Cotter is the new Director of the Scientific and Technical Information (STI) Division. She was formerly the Director of the Defense Applied Information Technology Center, a component of the Defense Technical Information Center. In addition to other positions related to the management of technical information and the as-

sociated technology, she was also employed briefly at the NASA STI Facility. She has masters degrees in business, information systems management (MBA, George Washington University), and library science, automated systems (MLS, University of Maryland).

Cost Estimate For Online Charges Available in NASA/RECON

It's been said that budgets and time are the two commodities in shortest supply in modern society. And, unfortunately, their parallel relationship often requires the expenditure of one to improve the other. Since online searching can be expensive, and the budget estimating and cost recording time consuming, we are happy to announce RECON's latest feature—the capability to display an up-to-the-minute estimate of RECON and Telenet costs while online.

Designed as part of the CURRENT command, this feature can be accessed by entering CU for a full CURRENT screen. The estimated cost of the session displays on lines three and four.

ENTER: CU

CURRENT SESSION STATUS

DATE NOVEMBER 06, 1989
NASA/STIF TIME 09:07
EST RECON COST \$2.80
EST TELENET COST .. NO COST
FILE COLLECTION A
EXPERIENCE LEVEL .. EXPERT
SECURITY SECRET RESTRICTED
ACCESS LEVEL DOM. NASA
MODE STANDARD
SPECIFY FORMAT NOT IN EFFECT
LIMIT ALL NOT IN EFFECT
SET(S) IN USE NO SETS CREATED
ACCESSIONS KEPT KEEP SET IS EMPTY
PRINTS NO PRINTS REQUESTED

For a quick check on cost only, enter CUC. Both CU and CUC will replace the screen you are displaying with session status information.

This feature can be accessed at any time during the search session without interrupting the strategy or signing off the system. And execution of the cost command immediately before SIGNOFF makes recording online charges a much simpler process. *But remember: once a SIGNOFF is executed, the cost information is no longer available online.*

Searchers who do not use Telenet to access RECON will simply get a "NO COST" message on the Telenet line of the CURRENT display. Since AT&T charges are not calculated, those users must refer directly to their phone bill for the telecommunication portion of their search cost. For hardwire terminal users, the CURRENT display says "NO COST" in place of an actual estimates for both RECON and Telenet. Both charges are estimates only, so some variation may be noted between the online listing and your monthly invoice.

For additional information on the cost command, enter HELP CURRENT (x435).

New Publication

A brief description of a new publication recently released by the Scientific and Technical Information Division follows. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The GPO order number, the NTIS price code, and the NASA accession number are given, where available, with the description.

Time-Variable Phenomena in the Jovian System (NASA SP-494)

NASA SP-494, *Time-Variable Phenomena in the Jovian System*, has been published by the Scientific

and Technical Information Division and the Office of Space Science and Applications. This book presents the theoretical framework for understanding and interpreting various phenomena in the Jovian system as well as a comprehensive synthesis of the state of our knowledge. The book has three sections: satellite phenomena and rings; magnetospheric phenomena, Io's torus, and aurorae; and phenomena in the Jovian atmosphere.

This paperbound volume of 413 pages is illustrated with charts, graphs, and photographs. It is a technical work, targeted toward planetary scientists.

(Avail:GPO for \$29.00;
GPO Stock No. 033-000-01058-3)

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Subject terms recently added to the NASA Thesaurus are listed. These terms are currently available on *NASA/RECON*. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

ADVANCED LAUNCH SYSTEM (STS)
ADVANCED SOLID ROCKET MOTOR (STS)
ALS (LAUNCH SYSTEM)
USE ADVANCED LAUNCH SYSTEM
ASRM (STS)
USE ADVANCED SOLID ROCKET MOTOR (STS)

CONGRESSES
USE CONFERENCES
EFFECTORS
(USE OF A MORE SPECIFIC TERM IS
RECOMMENDED—CONSULT THE TERMS
LISTED BELOW)

A Milestone

International Aerospace Abstracts Publishes One Millionth Record

The December 16, 1989 issue of *International Aerospace Abstracts* (Vol. 29, Number 24) will contain the one millionth IAA record added to the *RECON* database. The record references a paper entitled "Analysis of a Second-Order-Accurate Finite-Volume Method for Temporally-Growing Compressible Shear Layers," authored by H. L. Atkins of NASA Langley Research Center.

C. W. Hargrave Retires

The Chief of the Acquisition and Dissemination Branch for the last 10 years, Charles W. Hargrave was with the NASA Headquarters Scientific and Technical Information (STI) Division for more than 27 years. With a total of 35-1/2 years in federal service, Charles W. Hargrave retired on December 2. His expertise in the procedures and processes required for the management of the NASA STI system, particularly of the STI database, will not be easily replaced. Along with already retired Van Wente, who left last May, this marks the end of service for the group who started and developed NASA's STI system. We heartily wish "CW" a well earned and successful retirement.

The **STI Bulletin** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Jackie Streeks at the address below or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT-2, Washington, DC 20546, (202) 755-1246.

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NASA STI Facility
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B.W.I. Airport, MD 21240
(301) 621-0300

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1990

NASA Science Net Ties to NASA/ARIN

The National Space Science Data Center (NSSDC) will be interconnected to NASA's Scientific and Technical Information Facility via a direct communications line. A tail circuit has been installed from the NASA Science Network (NSN) to the Facility.

The establishment of a direct connection to the NSN will enable NASA's scientists and principal investigators to log-out of their current application or hotkey out and login to the STI Facility. Ease of accessibility to the STI Database will enable NASA's scientists and principal investigators to perform their research more efficiently.

Connecting the STI Facility and the National Space Science Data Center via the NSN will provide experience for tying into other hard-data clearinghouses and networks. Initial testing will enroll a small number of users of the STI Facility's NASA/ARIN (Aerospace Research Information Network) and the SPAN (Space Physics Analysis Network) at the Goddard Space Flight Center.

The big benefit for users of the NASA/ARIN online catalog system will be the ability, right from their office, to locate information related to a bibliographic title held by any of the participating NASA libraries, as well as the analytical and graphics tools available through SPAN. The NSSDC Master Directory will serve as a readily available online system for locating and browsing summary information about space and earth science data. (continued on page 3)

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NASA STI Database Adds 3,000,000th Record

There are now over three million records in NASA's STI Database. The record setting volume was accessioned as N89-22969, and is listed under Category 42, Geosciences (General). The document consists of a folder containing a main report, a companion report, four brochures, and seven color images. These colorful components totaling 305 pages were published under the auspices of the Earth System Sciences Committee (ESSC) and the National Aeronautics and Space Administration in Washington, DC. The report entitled "Earth System Science: A Program for Global Change" gives a vivid and sweeping view of Earth sciences work in the space program and for the future.

This landmark report joins over 40,000 records dealing with the Earth sciences in NASA/RECON. These include government reports, journal articles, and books that deal mainly with remote sensing of Earth resources and related topics such as atmospheric sciences, geophysics, and oceanography. There are over 1,500 NASA Thesaurus terms that relate to Earth sciences. These terms and their hierarchies and selected definitions are available in the printed and online versions of the NASA Thesaurus.

NASA/RECON — TMIS CONNECTION

NASA's Scientific and Technical Information Division (Code NTT) is exploring with the Space Station Freedom Program (SSFP) (Code SS) linking NASA/RECON and their Technical and Management Information System (TMIS). Users of NASA/RECON would be able to log onto TMIS directly from their keyboard, and TMIS users onto NASA/RECON. TMIS contains full text and graphics of documents related to Space Station requirements. TMIS comprises the following:

TMIS Administrative Workstation. An IBM-AT or AT compatible personal computer that runs the MS-DOS operating system.

TMIS Documentation Workstation. An Apollo Domain 300 computer that runs both the AEGIS operating system and the MS-DOS operating system.

TMIS Document Management System. All of the necessary components for users to create, manage and store documentation, reports, drawings, or any electronic file.

(continued on page 3)

Focus On...

Each issue of the STI Bulletin features a product or service available through the STI Facility. This month the STI Bulletin will focus on:

Document Ordering Service

In order to provide members of the NASA research and development community with full-text copies of individual documents cited in the NASA STI Database, the NASA STI Facility offers an on-demand document request service. This service affords registered users quick and convenient access to the vast reference holdings of stock copies and microfiche stored at the NASA STI Facility.

Scope

Generally, all NASA sponsored reports are available in paper copy and/or microfiche. NASA supported reports are identified on NASA/RECON or in NASA publications such as STAR, by an asterisk immediately following the accession number. Those documents which are available on microfiche will have a pound sign following the accession number.

Availability

Scientists and engineers working at NASA Centers or working for contractors and subcontractors normally obtain documents from the NASA STI Facility by making requests directly through their local technical library.

Unclassified, limited, and classified documents may be ordered depending on the requester's registration profile, security classification as registered with the NASA STI Facility, and any limitation which may be imposed on the document. Those requesters who are ineligible to receive their desired documents are promptly notified of their ineligibility and, whenever possible, directed to another source.

The document ordering service delivers to the NASA community essential research reports in a minimum turnaround period for a minimum charge. Reports are available in paper copy or microfiche format. For paper copy requests, stock copies are used until stock supplies are depleted. When stock copies are no longer available, a blowback is made from the microfiche of the requested document. Users are invoiced monthly for document orders. Based on standard NTIS prices for paper copy and microfiche, requesters are charged for items ordered.

Document orders may be placed via letter request, phone request, FAX (see STI Bulletin Vol. XIX, No. 6), or as in most cases, electronically by using the online ORDER command on the NASA/RECON retrieval system. To expedite processing, requesters are asked to refer to their NASA STI Facility Identification Number. In all cases, document requests enter the processing

cycle immediately upon receipt and verification of service eligibility. Requesters are given prompt notification of any possible delays in processing.

Delivery

Most orders are processed and mailed within five work days after receipt. Completed orders are shipped via first class mail or UPS with no additional postage or handling charges. Overnight mail delivery can be supplied at the customer's request at the current express mail rate. The charges for overnight services are itemized on the users' monthly invoice.

Documents are delivered to a central point, such as the library or information center, in each organization that has registered with the NASA STI Facility to receive document delivery service.

New Publications

Brief descriptions of publications recently released by the Scientific and Technical Information Division follow. The source from which the publication is available is given following the description. Copies may be available for sale from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402, or from the National Technical Information Service (NTIS), Springfield, VA 22161. The GPO order number, the NTIS price code, and the NASA accession number are given, where available, with the descriptions.

Powered-Lift Aircraft Technology (NASA SP-501)

For more than 30 years powered-lift research and technology have been perceived in the context of enabling an aircraft to operate from short or reduced-length runways or from minimum-size terminal sites. Powered-lift aircraft have been categorized by acronyms such as STOL (short takeoff and landing) and VTOL (vertical takeoff and landing), corresponding to the aircraft's capabilities. *Powered-Lift Aircraft Technology* provides an overview of this field of aeronautical technology for several types of powered-lift aircraft. It focuses on the description of various powered-lift concepts and their operational capability. Aspects of aerodynamics and flight controls pertinent to powered-lift aircraft are included in the discussion. 36 pages, color and black-and-white illustrations.

(Avail. GPO for \$4.25;
GPO Stock No. 033-000-01062-1)

Issues in NASA Program and Project Management (NASA SP-6101(02))

This new collection of papers on aerospace management issues contains a management history of the Tracking and Data Relay Satellite System (TDRSS) program together with lessons learned therefrom; reflections on management from the former director of Marshall Space Flight Center; a look at NASA program management from an industry viewpoint; an analysis of systems management in the Apollo era; management and budget lessons from the Shuttle Program; a summary of NASA management

(continued on page 6)

CASET Database for RECON II

In collaboration with NASA Headquarters Code U, Office of Equal Opportunity Programs, a database of the Center for Advancement of Science, Engineering, and Technology (CASET), Huston-Tillotson College, will be made available on NASA/RECON.

The CASET Database contains data on the supply of minority and women scientists, engineers, and technologists for government and industry. The CASET Database is designed for keyword searches with quantitative information from the growing body of literature on minorities and women in technical fields. It is hoped that by use of the CASET Database these persons can be helped to achieve careers in science and engineering.

Maximum retrieval flexibility will be maintained by storing the majority of the data fields as searchable text with inverted indexes tailored for each field so as to permit retrieval on individual words and/or multiple words as a string for each field.

The database will exist in a separate file collection. CASET will provide records to the STI Facility on magnetic media (either floppy discs or tape) in a format mutually agreeable to technical staff of CASET and the STI Facility. This applies to both the initial file to be loaded as well as to all future replacement files.

The *NASA Thesaurus* controlled vocabulary will not be used. CASET will prepare a separate thesaurus file which will be used to control indexing vocabulary at load time.

NSN Ties to ARIN

(continued from page 1)

Users of the SPAN network, a great number of scientists and engineers with NASA and NASA contractors, will be able to come into NASA/ARIN to access the information typically available in the traditional card catalogs familiar to library users. This will greatly expand the STI Facility's usefulness to the NASA R&D community.

Through NSSDC and NSN, users have access to the Astrophysics Master Directory, the Climate Data System, the Planetary Data System, the NASA Ocean Data System, and the Pilot Land Data System. Access can also be had via NSN to directories and databases all over the world. In recent demonstration, the Master Directory was accessed from Prague, Czechoslovakia. For further information, call Dick Tuey, 202-755-1030 or FTS 755-1030.

Payment for STI Products and Services

The contractor for the NASA Scientific and Technical Information (STI) Facility has been directed to implement procedures immediately for collecting overdue bills for STI services and products. These are to be discontinued if bills are not paid.

Integrated Astronomy Thesaurus

NASA STI Division is cooperating in a project to develop a world-class astronomy vocabulary based upon existing major astronomy thesauri. A computer tape of the *NASA Thesaurus—Astronomical Terms* has been sent to the Smithsonian Astrophysical Observatory (SAO), Cambridge, Massachusetts.

SAO proposes to develop an integrated astronomy thesaurus which would be the recognized authority in astronomy. The International Astronomical Union (IAU) has recently developed an astronomy thesaurus and has also been cooperating in the project. The project is international in that the IAU list comes from Australia.

On the basis of its analysis, SAO will propose how to proceed, with possible NASA support. Such an astronomy thesaurus would be most useful to the *NASA Thesaurus* and could result in the enhancement of the 1991 edition.

NASA STI Division will be kept informed of developments, and will assure that it is of assistance to NASA STI users.

TMIS Connection

(continued from page 1)

The TMIS Document Management System includes components for the VAX host, workstation, network, file-transfer, and common user interface. Includes PALS (EDCS, BRS), Interleaf, DW4, CUI scripts, file transfer scripts, filters, and the custom interfaces written for TMIS.

EDCS: Engineering Data Control System. The *Digital Equipment Corporation* COTS product being used for the LIBRARY CONTROL SYSTEM. EDCS is a file management package.

BRS or BRS/Search. The *BRS Information Technologies* COTS product (*BRS/Search*) being used for the LIBRARY SEARCH SYSTEM. BRS/Search is a full-text database search package.

PALS: Program Automated Library System. The VAX Host components of the Document Management System. PALS is composed of two subsystems: LIBRARY CONTROL SYSTEM and LIBRARY SEARCH SYSTEM.

NASA STI Directory Updated

The *Directory of NASA Scientific and Technical Information and Related Organizations* for 1990 has been printed. Included are names and telephone numbers, and area of activity for the scientific and technical information people at:

- NASA Headquarters
- American Institute of Aeronautics and Astronautics, Technical Information Service
- NASA Scientific and Technical Information Facility
- NASA Centers
- Technology Utilization Centers

Requests for copies should be forwarded to Sue Floyd, NASA STI Facility, (301) 621-0160.

Defining Your Environment in RECON II

This year when RECON II goes online, searchers will have the capability of structuring their own search universe, or defining their search environment. Users who wish to search a more limited part of the database or combine files that do not reside together in a standard file collection may do so by using the newly created ENVIRONMENT command. The old familiar RECON file collections will still be available.

ENVIRONMENT consists of three parts or commands, and each may be manipulated separately. The first is the COLLECTION command, which is similar to the old LIMIT-ALL command. To create a file collection of your own in RECON II, simply enter your desired collection name and attributes such as accession series and accession year(s) as in the following example:

COLLECTION 119 85-89 STAR.C
command series year(s) name

In this example, by using the collection command you will have created and stored a file collection named STAR.C. That collection will consist only of STAR (File 119) records from accession years 1985 through 1989. As you search, your SCAN screens (similar to the old EXPAND) and your set postings will reflect only the portion of the database that you have requested. Note the .C extension on the name given to the file collection. This is required as the extension for any collection name so that RECON II may identify it as a collection. (You will learn that other definable features require similar extensions, i.e., a stored query or search name requires a .Q, etc. You always will be able to tell what it is you have stored by the extension you have given it.) Keep in mind that you may input any number of accession series that you wish to search as part of this collection.

The second definable feature within the ENVIRONMENT command is the FORMAT, much like the old SPECIFY FORMAT, but a great deal more flexible. This command in itself contains three parts: a position indicator, so that you may specify the exact column in which a field will appear; a field mnemonic, so that you may designate the field you want in the column; and an output label, so that you may customize the field tags on your screen and printout to ones that make sense to you or your patron. This sounds rather complicated, but really is just very precise. You can visualize it better with the following example:

position indicator ; field mnemonic ; output label
= 5 ; au ; AUTHORS =

This will print the authors' names beginning in column five, and preceded by AUTHORS =.

Of course, you will often want to format more than just one field. To do so, repeat the above sequence, changing the columns and mnemonics. For example:

= 5;acc;accession = +2;au;AUTHOR = %1;utp myformat.F

In this example, the accession number will begin in column five, labeled ACCESSION =. The author's name will print two spaces after the accession number, and will be labeled AUTHOR =. RECON II will then issue a single line feed, and print the title beginning in column one, with the standard system label UTTL:, since you have specified no other. See the example below to view the actual format described. Note that this format will be stored under the name MYFORMAT.F; the .F extension identifies it as a format for RECON II.

ACCESSION NUMBER = 8911923367 AUTHOR = Richardson, D.I.
UTTL:Standardizing bibliographic processing

Later issues of the *STI Bulletin* will carry more information about the FORMAT command and all of its available options.

The final feature of the ENVIRONMENT command is the default field mnemonic. Under current RECON, the default mnemonic is always subject terms (ST). Unless you specify another field in which you want to search, RECON only will search major and minor terms. With the MNEMONIC command under RECON II, you may change the default mnemonic to any field you desire. For example, if you are searching a series of contract numbers, you may find it easier to change the default mnemonic to CN so that you do not have to key the field mnemonic each time. This is done simply by entering:

MNEMONIC CN

For example, to FIND (SELECT) a series of documents by their contract number, you must only enter FIND 'NSG-12345' instead of FIND CN = 'NSG-12345'.

Contract Number will remain the default mnemonic until you change it or end your search session.

If COLLECTION, FORMAT, and MNEMONIC can be used independently of each other, where does the ENVIRONMENT command come in? ENVIRONMENT is the command you would use if you want to save all three of these features as a single element, able to be recalled together. This is useful if you have specialized tasks which require frequent or periodic searches in the same file(s). To combine all of the examples shown so far into one element, enter:

ENVIRONMENT STAR.C MYFORMAT.F CN ENV1.E
command collection format mnemonic name

Now that you have set up the individual pieces, in order to recall a file collection limited to STAR citations for 1985 through 1989, with the format specified, with a default field mnemonic of CN, you need only enter ENVIRONMENT ENV1.E. That single command creates for you that frequently searched environment that you require, without you having to remember the individual elements or re-key them. If you later want to change any of the elements, you may edit them at any time.

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ASTM Receives Results APR
Aerospace Management, New Series on JAN

-B-

BROWSE and TYPE: Two Forgotten Commands JAN

-C-

Color Copies Available OCT
Continuing Bibliography Series JAN
COSMIC Software Catalog AUG/SEP
Cost Estimate For Online Charges NOV/DEC

-D-

Dial-a-Shuttle APR
Directory of Numerical Databases JUN/JUL
Document Delivery by FAX AUG/SEP
Document Ordering Via FAX JUN/JUL

-E-

Express Delivery Service MAY

-L-

Literature Search Service NOV/DEC

-M-

Making of the 1988 NASA Thesaurus, The MAY
Management, NASA SP-7500 JAN
Microcopy Service APR
Milestone, IAA Publishes One Millionth
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-N-

NACA Historical Shelflist JUN/JUL
NASA/RECON MAY
Notice
C. W. Hargrave Retires NOV/DEC
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Dryden Flight Research Facility Changes APR
Express Delivery Service MAY
Gladys A. Cotter, New STID Director ... NOV/DEC
New Pubs. Supervisor FEB
New Telephone Nos. for Langley FEB
To STI Bulletin Readers APR, MAY
NTIS Price Codes Online FEB

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Online ORDERing Option Available FEB

-P-

Publications

Advanced Turboprop Project,
NASA SP-495 JAN
Astronautics and Aeronautics, 1985,
NASA SP-4025 FEB
Infrared Astronomical Satellite (IRAS) Catalogs and
Atlases,
NASA RP-1190 JAN
Infrared Observations of Comets Halley and Wilson
and Properties of the Grains,
NASA CP-3004 FEB
Microgravity Science and Applications
Bibliography 1988 Revision,
NASA TM-4098 APR
Microgravity Science and Applications Flight
Programs, January-March 1987, Selected Papers,
NASA TM-4069 MAR
Microgravity Science and Applications Program
Tasks 1988 Revision,
NASA TM-4097 APR
NASA Directions in Space Propulsion for 2000
and Beyond,
NASA TM-102281 JUN/JUL
NASA Geodynamics Program Summary Report:
1979-1987,
NASA TM-4065 APR
NASA Information Sciences and Human Factors
Program—Annual Report, 1988,
NASA TM-4126 OCT
NASA Scientific and Technical Publications:
A Catalog of Special Publications, Reference
Publications, Conference Publications, and
Technical Papers, 1988,
NASA SP-7063(03) AUG/SEP
NASA Space/Gravitational Biology
Accomplishments,
NASA TM-4079 MAR
Nutritional Models for a Controlled Ecological
Life Support System (CELSS): Linear
Mathematical Modeling,
NASA CR-4229 JUN/JUL
Orders of Magnitude, A History of the NACA &
NASA, 1915-1990 Aug/SEP
Planetary Cartography in the Next Decade: Digital
Cartography and Emerging Opportunities,
NASA TM-4092 MAY
Planetary Geosciences—1988,
NASA SP-498 OCT
Probabilities and Statistics for Backscatter Estimates
Obtained by a Scatterometer with Applications to
New Scatterometer Design Data,
NASA CR-4228 JUN/JUL
Propagation Effects Handbook for Satellite Systems
Design—A Summary of Propagation Impairments
on 10 to 100 GHz Satellite Links with Techniques
for System Design, NASA RP-10802(04) MAY

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Publications of the Biospheric Research Program:
1981-1987,
NASA CR-4204 MAR
Reports of Planetary Astronomy, 1989,
NASA TM-4120 OCT
Seventeenth NASTRAN Users' Colloquium,
NASA CP-3029 JUN/JUL
Space Medicine Research Publications: 1984-1986,
NASA CR-4184 MAR
Time-Variable Phenomena in the Jovian System,
NASA SP-494 NOV/DEC
Thermal Protection System of the Space Shuttle,
NASA CR-4227 OCT
USSR Space Life Sciences Digest Issue 19,
NASA CR-3922(22) FEB
Where No Man Has Gone Before: A History of
Apollo Lunar Exploration Missions,
NASA SP-4214 AUG/SEP

-R-

RECON

Cost Estimate for Online Charges NOV/DEC
File Directory (revised) OCT
Help Menu Revised MAY
Introducing RECON II AUG/SEP
MOWG Meeting MAR
NASA/RECON MAY
RECON II: Frequency Power NOV/DEC
Training Classes Rescheduled . JUN/JUL, AUG/SEP
Training Schedule APR
Research & Development Contract Search File . JUN/JUL
Research & Technology Objectives & Plans Summary
(RTOPs) MAR

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Scientific & Technical Publications:
A Catalog ..., NASA SP-7063 JAN
Scope and Coverage (Revised) Now Available MAR
Selected Current Aerospace Notices (SCAN) FEB
Space Commercialization Database (SCD) OCT
Space Station Systems, NASA SP-7056 JAN
Spinoff OCT

-T-

Tech Briefs AUG/SEP
Technology for Large Space Systems,
NASA SP-7046 JAN
Thesaurus Terms JAN, FEB, APR, MAY,
JUN/JUL, OCT, NOV/DEC

RECON/RECON II COMMAND COMPARISON

The following chart compares commands used in the current version of RECON to their proposed closest equivalents in RECON II. Though the command name may be the same in both versions, a command's function may be expanded or enhanced in the RECON II version. This chart was compiled as of January 1990, and may be subject to modifications. We will begin releasing more specific information about individual commands later in this and in future issues of the *STI Bulletin*.

RECON Command	RECON II Command(s)
BEGIN	BEGIN, EXPERIENCE
BEGIN BYPASS	ENVIRONMENT
BROWSE, DISPLAY, TYPE	DISPLAY
COMBINE	FIND
COMMAND STATUS	(under CICS no provisions made)
CURRENT	CURRENT
DISPLAY	DISPLAY
END	END, ADDRESS
EXIT	ESCAPE (HELP)
EXPAND	SCAN, RELATE
FREQUENCY	FREQUENCY
HELP	HELP
KEEP	KEEP
LIMIT	LIMIT
LIMIT ALL, LIMIT RELEASE	COLLECTION
ORDER	ORDER
PAGE	PAGE
PRINT	PRINT
RELEASE	DELETE
SEARCH EXPRESSION	FIND
SELECT	FIND
SET STATUS	REVIEW
SORT	SORT
SPECIFY FORMAT	FORMAT
SIGNON	SIGNON
SIGNOFF	SIGNOFF

RECON Command	RECON II Command(s)
TUTOR	TUTOR
N/A	COPY (ENTITIES)
N/A	DIRECTORY
N/A	HOME
N/A	MNEMONIC
N/A	RETURN
N/A	UNSORT

— — STORED SEARCHES — —

QUERY ALTER	ALTER
QUERY CONTINUE	CONTINUE
QUERY DELETE	DELETE
QUERY DISPLAY	LIST
QUERY EDIT, QUERY CREATE	EDIT
QUERY EXECUTE	EXECUTE
QUERY LIST	LIST
QUERY MEMBER	DIRECTORY
QUERY PAUSE	PAUSE
QUERY PURGE	DELETE
QUERY QUIT	QUIT
QUERY REPLACE	COPY, RENAME
QUERY SAVE	SAVE
N/A	ESCAPE
N/A	INSERT
N/A	LOCATE
N/A	MOVE

Defining Your Environment in RECON II (continued from page 4)

The bottom line is that under RECON II, if you want to search the Directory of Numerical Databases (F10K) along with ISS (A10K) for the years 1980 to 1985, you can create a file collection containing just those records. Since your SCAN screens will reflect only those records, the postings you see on the screens will be a true picture of the hits you will get in your search. You must be careful, though, when grouping files into one collection. For example, searching subject terms (ST) in a file collection containing STAR and NACA records will retrieve only from the STAR records, since NACA records do not contain subject terms. NACA records contain subject headings (SUB). However, you could search titles in both series under a single mnemonic, as well as abstracts.

We hope that through careful use of the ENVIRONMENT command and its associated commands, COLLECTION, FORMAT, and MNEMONIC, you will find creative ways to exploit RECON II's flexibility to your advantage. Once you master the RECON II basics, features like ENVIRONMENT can be an instant productivity boost, helping you to maximize staff time and monetary resources by making

NACA File Completion Planned

A file of 200,000 references to world-wide aeronautical research will be made completely available online. This file covers the years 1915 to 1960 and was collected by the Library of the National Committee on Aeronautics. Approximately one-half of the file is now available online through the NASA/RECON bibliographical system. New terms to be added include valuable R&D in supersonic and hypersonic aircraft, hydrodynamics, wind shear, tires and safety, and fuel and engine research. Making this information available will help prevent duplication of effort, and could save millions of dollars of federal funds.

retrieval of frequently needed information as easy as entering a single command.

Under RECON II, you may create and store your own file collections and formats, and may change the default field mnemonic for searching. These features can be exercised individually or stored as a user-defined search ENVIRONMENT.

DOMESTIC RESOURCE BIBLIOGRAPHIES

IRM Bibliography To Be Available

The concept and initiation of Information Resources Management (IRM) may be one of the most significant reforms since the Hoover Commission 50 years ago. IRM in its simplest form is the management of data and information in a manner that encourages and promotes achievement of agency and program goals and objectives. The Paperwork Reduction Act of 1980 established IRM principles and led to its initiation in many federal agencies.

NASA has provided leadership in implementing IRM. Within NASA, IRM has become a basis for planning more responsive and coordinated information management structures and procedures. IRM supports the larger technological, managerial, and legal frameworks in which NASA must continue to manage as a federal agency.

To help managers to clarify their own thinking about what they are doing, and to take advantage of what other IRM managers have done that might be applicable, NASA is issuing an IRM bibliography. We hope it is both stimulating

and useful. It covers 1984 through 1989, and should be out this Spring.

Productivity and Quality Bibliography Issued

Sharing quality and productivity information is a key to achieving excellence through teamwork for NASA and its contractors.

Managers are most effective when they share their thoughts, plans, and activities, thus arriving at a consensus on actions to increase the quality of goods and services and the productivity of the workforce.

Entries are drawn from the literature entered into the NASA Scientific and Technical Information Database 1984-1989. It is hoped that managers will be able to follow up on leads they find here, to improve their management of human resources and thus the processes and services of federal agencies and their contractors (SP-7078, October 1989).

New Publications

(continued from page 2)

from 1961 to 1985; and a listing of current resources available to NASA managers. A wide variety of opinions and techniques are presented.

This volume is the second in an ongoing series from NASA's Program and Project Management Initiative. 51 pages; illustrations.

(Avail: GPO for \$2.50;

GPO Stock No. 033-000-01064-8)

FGK Stars and T Tauri Stars (NASA SP-502)

A new Special Publication has been published by the Scientific and Technical Information Division and the Goddard Space Flight Center. This is the seventh volume in the monograph series on Non-Thermal Phenomena in Stellar Atmospheres. It provides a contemporary summary of the best space- and ground-based observations of these 'cool' stars, as well as a critical assessment of the current theories for explaining a wealth of non-thermal phenomena known to occur in their atmospheres. Chromospheres, coroneae, winds, and magnetic active regimes are topics discussed in depth. Dynamo activity for producing magnetic fields and its implication for gradual change in cool star properties from the main sequence up to the giant and supergiant luminosity classes are examined in depth.

This is a 360-page paperbound, illustrated with graphs and black and white photographs.

(Avail: GPO for \$18.00;

GPO Stock No. 033-000-01073-7)

SCAN Available Online

Users of NASA/RECON now can view the current issue of Selected Current Aerospace Notices online. This semimonthly current awareness service selects topics announced in the most recent issues of STAR and JAA, and breaks them into nearly 200 discreet topics such as Navigation Systems or Radiation Belts. To select a SCAN topic, simply select the topic as in the following example:

SELECT SCN/02-01

This will produce a set of all citations included in the current issue of SCAN under Topic 02-01, Aerodynamic Characteristics.

For a list of the available topics by number, enter:

HELP SCAN TOPICS

More information on the feature itself is available through:

HELP SCAN

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed below. These terms are currently available on NASA REGON. Definitions are given for some selected terms previously announced. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

AIRCRAFT HANGARS
USE HANGARS

ALS (LAUNCH SYSTEM)
USE ADVANCED LAUNCH SYSTEM
(STS)
(corrected entry)

AM (MODULATION)
USE AMPLITUDE MODULATION

ARMS (ROBOTICS)
USE ROBOT ARMS

BLOCK COPOLYMERS

BOUNDARY DETECTION (IMAGERY)
USE EDGE DETECTION

CONDUCTING POLYMERS

EDGE DETECTION

ELLIPSOMETRY

ENGINE RELIGHT (IN-FLIGHT)
USE AIR START

FINGERS (ROBOTICS)
USE END EFFECTORS

FM (MODULATION)
USE FREQUENCY MODULATION

FUSION HEAT
USE HEAT OF FUSION

GLOBAL WARMING

HANDS (ROBOTICS)
USE END EFFECTORS

HYDROGEN FLUORIDE LASERS
USE HF LASERS

IN-FLIGHT STARTING
USE AIR START

NORTHERN IRELAND

OLIGOMERS

PAN (POLYACRYLONITRILE)
USE POLYACRYLONITRILE

POLYACRYLONITRILE

POLYMER BLENDS

ROBOT ARMS

ROBOT FINGERS
USE END EFFECTORS

ROBOT HANDS
USE END EFFECTORS

ROBOT DYNAMICS

ROBOT MOTION
USE ROBOT DYNAMICS

ROBOT SENSORS

SOHO MISSION

SOLAR AND HELIOSPHERIC OBSERVATORY
USE SOHO MISSION

SPACE MEDICINE
USE AEROSPACE MEDICINE

SPACE SHUTTLE MISSION
NOTE: All STS USE references have
been deleted.

STRUCTURED PROGRAMMING

SYMPOSIA
USE CONFERENCES

TRANSITIONS FLIGHT

UARS (SATELLITE)
USE UPPER ATMOSPHERE RESEARCH
SATELLITE (UARS)
(corrected entry)

UPPER ATMOSPHERE RESEARCH SATELLITE
(UARS)
(corrected entry)

VIDEO TAPE RECORDERS

WALES

NEWS BRIEFS

AGARD Bibliographies

At the request of the AGARD Technical Information Panel Executive, NASA/STI Division is supporting the AGARD 1990 Lecture Series. Bibliographies are being provided for a U.S. Director on "Comparative Engine Performance Measurement," and a Turkish Director on "Speech Analysis, Synthesis, and Man-Machine Speech Communications for Air Operations."

NARA Plans Online Access to NASA STI

Representatives of the National Archives visited the STI Facility. The National Archives and Records Administration (NARA) plans to gain online access to the National Advisory Committee for Aeronautics (NACA) Report collection. Within the next few years, NARA plans to acquire and permanently archive a complete set of NACA reports. The STI Facility and the NASA Centers will be asked to assist NARA in building their collection.

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NASA STI Program in GIO

A series of papers covering the NASA STI program is sched-
uled for the Spring 1990 issue of the *Government Informa-
tion Quarterly*. Planned contents include:

- Management of Information in
Research and Development
Agency
- The New Space and Earth Science
Information Systems at NASA's
Archive
- Scientific and Technical Information
Management
- NASA STI for the 1990's
- Technology Utilization: Managing
the Transfer of NASA Aerospace
Technology to Other Industries
- NASA's Educational Programs
- Legal Ramifications of Intellectual
Property
- Communications and Media
Services
- Enhancing U.S. Competitiveness
Through Federal Scientific and
Technical Information

GIO is issued by the JAI Press, Greenwich, Connecticut
and London, England. GIO is edited by Peter Hernon,
Graduate School of Library and Information Science, Sim-
mons College; and Charles McClure, School of Informa-

tion Studies, Syracuse University. Thomas Pinelli of NASA
Langley Research Center is guest editor of this issue.
For more information, contact Sue Floyd, (301) 621-2160.

NASA's Three-Year Printing Plan

The Joint Committee on Printing (JCP) requires that all
federal agencies and departments develop a Printing Pro-
gram Plan and submit it annually to the Committee. The
plan is used by NASA to plan its printing needs and by
the JCP to oversee the use of federal printing. NASA's
three-year Printing Program Plan, currently in prepara-
tion, identifies printing plant and/or duplicating facilities,
includes statistical and narrative printing costs, number
of jobs, comparative budget, and narrative statements
about the operations at each installation. For further infor-
mation, call Carl Sternitz at (202) 755-1065 (ETS 755-
1065).

The STI Bulletin

The STI Bulletin is a NASA newsletter about NASA
scientific and technical information products and services.
Direct suggestions, material to be considered for inclusion, and
comments to Jackie Streeb at the address below or telephone
(301) 621-0105, or John Wilson, NASA Headquarters, Code
1131, Washington, DC 20546, (202) 755-1246.

Direct RECON operational problems to the RECON Coordinator
at:

NASA STI Facility
P.O. Box 8757
BWI Airport, MD 21240
(301) 621-0300

Detach label with instructions for address or distribution change
and mail to the above address, ATTN: Registration Services.

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STI BULLETIN

SCIENTIFIC AND TECHNICAL INFORMATION DIVISION

President's Science Advisor Explores STI

Allan Bromley, Assistant to the President for Science and Technology, and Director of the Office of Science and Technology Policy (OSTP), made recently what may amount to a major policy statement in support of STI. There has been little evident support for STI in the higher levels of the Federal Government in Washington in recent years. Bromley's encouraging words may be a harbinger of better times to come for STI. In an address to the Forum on Federal Information Policies of the Federal Library and Information Center Committee, at the Library of Congress, he proposed:

As part of the restructuring of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), I am broadening the charter of the Computer Research and Applications Committee to include all aspects of information science and technology. STI issues, such as questions of standardization and the planning and management of very large databases are closely related. An alternative approach might be to expand the interagency STI group known as CENDI (for Commerce, Energy, NASA, NLM, Defense Information) into a full FCCSET committee. I believe that we must begin to address the issues posed by the special character and explosive growth of federal scientific and technical information. If we do not, we risk failing to reap the benefits of the emerging Information Age.

Dr. Bromley's insights into the issues, realities, and future of STI are provocative.

STI in the Information Age

The Information Age has resulted from the confluence of several technologies, including electronics, computers, and optical data storage and transmission. These forcing technologies are evolving at an accelerating pace and will create truly remarkable opportunities that, as a nation, we cannot afford to let pass by.

It was just a little over 50 years ago that Aiken performed his pioneering work on the Mark I digital computer at Harvard. Only a little more than 20 years have passed since the first fully commercial communications satellite, Intelsat I, was launched. Yet today the work is bound together in a global communications network, and information has become one of our most important media of exchange

STI has several unique characteristics ... comprising three broad types--traditional bibliographic information, numeric data such as that arising from physical measurements or computations, and graphic images such as those produced by space-based observing systems. These types generally have distinct sources, formats, and processing systems. But the trend is clearly toward electronic or optical systems that will store and transmit all three types.

A second distinguishing characteristic of STI is its audience. Scientific and technical information is used primarily by specialists. Relatively little STI is directly of interest to a

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National Aeronautics and Space Administration
Office of Management
Scientific and Technical Information Division
Washington, DC
1990

FROM THE STI DIRECTOR'S OFFICE

NASA STI for the 1990s

The entire Spring 1990 issue of *Government Information Quarterly* is devoted to the NASA STI program. Selections from the projection of NASA STI for the 1990s by Gladys Cotter, NASA STI Division Director, are presented.

Confronting Our New Decade

NASA is by concept and by practice an advanced technology agency. The thrust of the 1990s will be toward a more comprehensive, systematic use of computer and communications technology for all phases of NASA STI.

Computers for STI use in the 1960s and 1970s and continuing into the 1980s were tools to assist and, where possible, replace manual operations. STI managers hoped that computerization would prove cost-effective. This was not always so, although many new capabilities were realized.

Hard Realities of the 1990s

As the 1980s closed, neither scientist, engineer, nor STI professional had to be convinced that menu-driven systems, common command languages, gateways, and networking were hard realities. We all use them; available hardware and software determine our methods of working. Anticipated technology influences the systems we install: a well-designed system is developed and implemented to interface with and evolve into the next generation system. Available technology controls STI to a degree most of us never anticipated, and to an extent as yet undetermined. Most of us still think and act as though we still lived and worked in a non-computerized environment. We don't know yet what we can reasonably expect from our personal computer or workstation, our local area network (LAN), our mainframe, our search and retrieval software, or our database management system. Workstation technology as pioneered for the Space Station may become the prototype for what the efficient workplace will become: more comfortable, less stressful, encouragingly relaxed but alert attentiveness. STI access will be an integral part of this workstation development.

Artificial intelligence (AI), expert systems, and knowledge-based systems will be used in the development of future STI systems and to focus design and engineering of new and modified STI subsystems. These technologies are workable for narrowly defined activities. They are largely simulation routines, but they frequently try to simulate the wrong thing: manual performance of an activity or too broad-based an application. As we become more comfortable in our computerized environment, we will be better able to develop and use systems that will increase the efficiency of STI input, processing, search, retrieval, and networking.

Electronic Input and Output

While the NASA installations have indicated interest in a NASA-wide STI system, they will have to agree on common elements and convert to compatible hardware, software, and formats. The next step will be to obtain electronic input from NASA contractors. NASA installations and contractors already process their documents electronically; given standard formats and instructions, they will be able to transmit their documents electronically, thus moving toward a tightly-knit, agency-wide STI activity.

Networking

The NASA STI professionals must be at home with different computer hardware and software and with a variety of networks. Nearly every researcher in the NASA community has his or her own personal computer or workstation and is on at least one LAN. Pointers to data provided by traditional STI tools are becoming less and less useful and effective for the NASA scientist or engineer.

Documents retrieved can be as often frustrating as useful. Searches resulting in a long printout of NASA/RECON entries, or a series of entries viewed on the screen, may be baffling to the untrained user. Documents or substantial abstracts may supply facts, but the researcher's immediate need is for *data* that can be manipulated on the computer. Receiving a tape in the mail may be helpful, but more helpful is the ability to target and access the necessary data within minutes via a network the researcher hadn't known existed, using protocols that were previously unfamiliar.

(continued on page 7)

CENDI Appointments

Gladys Cotter, STI Division Director, has appointed two new members to working groups of CENDI -- the inter-agency group of STI managers from the Federal Departments of Commerce, Energy, and Defense; and NASA; and the National Library of Medicine.

Judy Hunter, Networking, has been named to the CENDI Standards Working Group. The Group is focusing on standards for electronic information exchange, which covers areas of concern to NASA STI such as networking, electronic publishing, and full text input.

Patt Sullivan, STI Operations, has been named to the CENDI Users Education Working Group. First project for this group is a workshop for cross-training members of the processing staffs of the CENDI member organizations.

A Step Toward Global Networking -- STI Division Joins ICSTI

NASA HQ Scientific and Technical Information Division has joined the International Council for Scientific and Technical Information (ICSTI). ICSTI provides a forum for the exchange of information and the sharing of experiences among international peers.

The expectations, indeed the demands of users of the 1990s will be far different from those of users in the late 1950s when ICSTI (then ICSU AB) was organized. New challenges will confront providers of information services. Users of the 1990s will expect far more from their information systems than bibliographic searches. They will expect facts, data, images, analytical support, and systems capable of generating options. More end users will directly interface with factual, numerical, and image databases.

The librarian-information specialist interface services will require depth of subject knowledge, as well as greater ease of database to database transfer, regardless of country or language of origin, or discipline. Delivery formats will change from print to electronic, and from delivery of documents or their surrogates to analytics, frequently in graphical form, and other forms related to what we loosely call today a 'knowledge base'.

To effect these developments, communications among members of ICSTI must be continuous. The STI Division will make a determined effort to keep in touch, and to assure the success of ICSTI.

NAS Establishes STI Board

The National Academy of Sciences has reconstituted the Numerical Data Advisory Board as the Scientific and Technical Information Board. The board consists of an interdisciplinary group of scientists who use information technology and scientific data for research and development. It is charged with overseeing and advising on the utilization of scientific data and information technology by the research and development community. It fosters improvement in the availability, utility, accessibility, quality, reliability, and management of scientific data. It fosters utilization of, and improvement in, the information technologies that can deliver reliable data to the R&D community.

Initial issuance of the STI Board will be a report: "Very Large Databases: Major Issues -- Managing Growth for Maximum Use." NASA Center and HQ representatives have participated in preparation of the report. Of direct concern to NASA STI is building a directory of databases and database systems and networks to support NASA's mission.

BROMLEY... (continued from page 1)

broad audience, although summary conclusions or findings based on that information may be. Thus the patterns of dissemination and the issues and needs regarding access to STI are rather different than those arising with, for example, census data.

A third distinguishing characteristic of STI is its sheer volume and growth rate. STI is the primary product of a major Federal activity--research and development--in which the government invests about \$70 billion per year. As a result, the Federal government is the world's most prolific generator of STI. The magnitude of science and technology information is generally unappreciated

Moreover, this staggering amount of information is a mere trickle compared to the flood of STI that is expected in the 1990s Overall, STI is expected to increase by two orders of magnitude--a hundredfold--during the 1990s.

Present STI budgets and technology do not even allow for such a quantity of data to be stored, much less efficiently managed or made available to intended users. Coping with a flow of such unprecedented volumes of information is clearly a monumental task

... the need for a national directory of directories of very large databases, a kind of electronic card catalog comparable to the card catalog of the Library of Congress.

Information Literacy

Unfortunately, even many of our educators, scientists, and engineers are not literate in today's information technology and thus cannot exploit the results of our large national investment in research and development We have seen only the beginning of the tremendous advances on the horizon in the area of user-friendly software.

Standards

There are over 1,700 separate entities around the world that maintain at least one, and often many, databases. But because of the lack of any agreed-upon standards, these databases span a wide variety of systems, services, command languages, protocols, and terminologies. In effect, we are building an electronic Tower of Babel that will sharply limit the utility of these resources.

Foreign STI

The United States is not making effective use of foreign science and technology to enhance our economic competitiveness. Current efforts by federal agencies to collect and assess foreign STI are fragmented, with no central clearing-

(continued on page 6)

Planned RECON Enhancements Respond to Long-Time User Wishes

Ask the searchers who started in the early 1970s how far online systems have come, and they'll tell you horror stories of waiting, and waiting, and waiting--for the system to respond; for promised enhancements to materialize; for new files to be brought online. Now ask 1990s searchers and you'll hear many of the same stories told in modern jargon. But realistically, we all know that online systems have indeed come a long way. It leaves database providers to scratch their heads and say, "OK, so what *do* users want?"

The March 1990 issue of *Online* includes an article entitled "Databank Software for the 1990s and Beyond - Part 1: The Users' Wish List." Part 2 of that article, which appears in the May issue, describes several major system vendors' responses to those wishes. The author, Reva Basch, contacted NASA STI Facility personnel for input into what RECON will offer users in the 1990s, and we are happy to say that according to Basch, the system meets or exceeds many of the most frequent requests users reported to her. Read Part 2 in the May issue to see how RECON stacks up against other major online systems.

This article summarizes some of the user requests cited in Part 1, and gives a more detailed explanation than that presented in *Online* of how RECON II will handle those functions.

Search Language

Basch's article reports that many users who search multiple systems have expressed frustration at having to learn and remember a number of different command languages, and have suggested a number of plausible solutions. One possibility is a common command language, where all online services use the same command names for primary searching functions. With thousands of online service providers in the United States alone, however, that may be a difficult feat to accomplish. Users also have suggested, according to Basch, that vendors provide cross-system emulation, or a customizable command language. In the former instance, systems would support their own native language, but also support other command languages so that searchers could use the command set with which they are most familiar. The latter suggestion would allow users to specify upon entering a system which search language they wish to use (i.e., define FIND as the primary search command as opposed to SELECT.) Several gateway systems already are in use or are under development to provide this function.

RECON II responds to this request in two ways. First, the system's native command language was heavily influenced by the standard language proposed by the National Information Standards Organization (NISO). This attempt at a common command language for those systems that chose to

support it was balloted within the general membership last Spring, though it was not adopted. It has since been revised by its authors, the Committee for Common Command Language for Use in Interactive Information Retrieval, based on comments submitted then. Revisions, according to Robin Wilderman of NISO, were aimed at resolving as many member concerns as possible, and analyzing the standard's compatibility with the already approved International Standards Organization (ISO) standard. RECON's support of much of the proposed language standard is a step toward the cooperation among systems that users are seeking, and a demonstration of willingness to move in that direction. Second, RECON will support a variety of commands to perform many of the basic searching functions (i.e., FIND or SEARCH or SELECT all will command RECON to retrieve citations based on provided parameters).

Databases and Database Selection

Among users' petitions under this category is the need for detailed database documentation online, and frequent updates. As current RECON users know, information about the NASA STI Database's individual files is available online through HELP screens, and displays such pertinent information as whether citations in the file are indexed using *NASA Thesaurus* terms, the frequency with which the file is updated, and the file's valid mnemonics. In addition, new HELP information is announced in the *STI BULLETIN*, and is available online at logon.

Users also have asked for the ability to store default logon parameters such as database(s) to be searched, chronological search limitations, and preferred display format. RECON II's ENVIRONMENT command, which can be executed immediately after a BEGIN search, allows users to store and retrieve pre-defined collections of files, year ranges to be searched, display/print formats, and default search mnemonics as a single unit. (See the January/February/March 1990 *STI BULLETIN* for more information on the ENVIRONMENT command).

Suggestions in this category also recommended that database providers offer multiple file searching, transparent to the user. That is, when a searcher logs on, he or she may input the type of information to be searched, and the system selects the appropriate files and searches them simultaneously. RECON, of course, in both its current and future versions, supports searching in file collections, where the primary R&D files are already grouped, for transparent cross-file searching. RECON users simply select a file collection if they do not want to search specific files independently. RECON II takes this concept a step further and allows users

(continued on page 6)

Why enter material 30 to 75 years old into the NASA STI Database? NASA/RECON's NACA file directs NASA aeronautics scientists and engineers to very useful basic research.

NASA's First 'A' Marks 75 Years of Achievement

With just a \$5,000 initial outlay 75 years ago on March 3, 1915, Congress established the National Advisory Committee for Aeronautics (NACA), which would, in 1958, form the foundation for the National Aeronautics and Space Administration (NASA). Even today, that first small investment--made only a dozen years after Orville Wright's famous flight--is still paying enormous returns.

Although the United States could claim the first heavier-than-air flight by the Wright brothers in 1903, American aviation had been surpassed by European technology at the outbreak of World War I, and no American-designed aircraft flew in combat. The NACA was created to help regain the nation's position of aeronautical preeminence.

From its beginnings as a simple government entity, NACA grew into the world's premier aeronautical research organization, pushing back the frontiers of flight for more than four decades. Aviation pioneers such as the Wrights, Jimmy Doolittle, Charles Lindbergh and Eddie Rickenbacker were among the early NACA members.

Congress directed the new NACA to "supervise and direct the study of the problems of flight, with a view to their practical solution." The committee was also to facilitate the exchange of information within the aeronautical community.

At that time, the United States had virtually no aeronautical engineers. NACA focused American scientific, technological, and industrial talent on the potential of aircraft and, in effect, created the academic disciplines of aeronautical engineering and its related fields.

Though NACA was begun later than similar European efforts, it eventually put the United States in the lead in aviation. Today, three-quarters of a century later, NASA scientists and engineers continue to solve the problems of flight, both in and beyond Earth's atmosphere. It was the NACA that first built key facilities and devised organizational methods for advancing what is now called aerospace technology.

The practical-minded engineers and scientists of the NACA incubated the ideas and hatched the technology that first allowed American aviation to take off and fly. The returns on the nation's investment in NACA remain clearly visible today in numerous ways.

By recognizing the needs of manufacturers and the military, NACA contributed extensively to every generation of commercial, civilian and military aircraft, and developed the foundations for the modern aviation and space industries. The economic benefits of this long-term American competitiveness are a particularly clear part of the NACA legacy. In 1989, for instance, the U.S. aerospace industry saw a trade surplus of some \$18 billion.

The growth was evident in another visible aspect of the NACA legacy: research facilities.

By the early 1920s, aeronautical research had begun in earnest at the NACA Langley Memorial Aeronautical Laboratory in Hampton, Virginia, whose personnel formed the nucleus for two newer laboratories. On the eve of World War II, Ames Aeronautical Laboratory opened in Mountain View, California, and the Aircraft Engine Research Laboratory began operations in Cleveland, Ohio. NACA/NASA innovations won six Collier trophies, America's most prestigious aviation award, for outstanding contributions to aviation technology.

(Langley Research Center News Researcher / March 1990)

18 Millionth NASA Thesaurus Term Posting

Over 18 million postings of *NASA Thesaurus* terms have been added to NASA/RECON records since 1968, allowing trillions of access points to NASA/RECON through combinations of *NASA Thesaurus* terms and text. Not included in the 18 million figure are over 1/2-million *NASA Thesaurus* postings affixed to Aerospace Research Information Network (ARIN) records. Each of NASA's three million RECON records has an average of six *Thesaurus* terms. The *Thesaurus* contains 17,250 terms covering the fields of aerospace interest. The 18 millionth posting was the *NASA Thesaurus* term, MAN TENDED FREE FLYERS.

The importance of new controlled vocabulary and the effectiveness of the NASA developed Retrospective Indexing can be seen in the 143 postings to MAN TENDED FREE FLYERS, added through computer aided indexing. Without this updating technique, complicated searches would be required to retrieve documents now accessible with a single term.

BROMLEY... (continued from page 3)

house and no ready means for industry to access much of this information.

Problems and Possibilities

... the emerging Information Age and the explosive growth of the underlying technologies is forcing rapid change Already, for example, sales of print and microfiche documents from the National Technical Information Service have declined 50 percent since 1980, while sales of computer products and online searching of the NTIS database via private vendors are growing....The absence of a high speed data network capable of rapidly transmitting the volumes of information produced by supercomputers adds to the frustration.

Imagine how science and math education might change if every student had access to a powerful but inexpensive workstation and a large database of text and graphic information and educational programs. Teachers could begin to customize the education of each child to suit his or her needs and automatically track their progress. Such an approach is technically feasible now and might well become economically feasible within the decade of the 1990s.

Imagine how publishing might change when periodicals can be customized for each subscriber to reflect his or her specific interests and delivered electronically Imagine how the role of libraries will change when connected over local networks via a wide-bandwidth channel such as an optical fiber or a cable TV conduit. Individuals would be able to search their local libraries, or electronically to select and retrieve text and pictures, rent and view a movie, or re-search specific needs Again, all of these are technically feasible today.

Imagine how much more efficient the federal STI efforts might be if data were archived on optical disks and could be searched and shared among agencies over a high-speed digital network using a common format. Imagine how professional work patterns will change when telecommuting, teleconferencing, and telecollaborating become even easier and cheaper than they are at present.

The management of scientific and technical information must keep pace. We must vigorously explore the emerging new technologies and reexamine our institutional structures for STI. We must increase our flexibility to respond to new needs and new opportunities. We must give adequate support to the planning and maintenance of our critical data repositories. And, finally, we must seek to improve access to STI wherever possible.

A new phase of the industrial revolution is now underway, a phase that depends not so much on machines as on information. Our job is to see that the benefits of that revolution are spread as widely as possible.

RECON ENHANCEMENTS (continued from page 4)

to define their own file collections (i.e., group whatever files in whatever year ranges they wish to search together into a single unit). These then are stored using the COLLECTION command, and also can be stored as part of a saved ENVIRONMENT. Unlike Dialog's cross-file searching capability, ONESEARCH, where the searcher specifies two or more files to be searched simultaneously, RECON charges do not vary based on the files included in the collection.

Document Retrieval and Display

Primary among users' concerns in this area is the relative inability to "weed out" duplicate citations from different files, causing searchers essentially to pay twice for the same information. Since the content and source of all files in the STI Database are defined by NASA, there is very little duplication.

Records with typographical or other errors was another concern that searchers would like to minimize. The NASA STI Facility does perform backfile maintenance on records in the NASA-originated files such as STAR. Users who find an error are invited to write the STI Facility and the record will be corrected as soon as possible.

The display format a user prefers may be as individual to the user (or to their needs) as their choice of professional affiliations. Current RECON has always provided four standard formats and the capability to define a customized format. RECON II's FORMAT command gives users a great deal more flexibility in positioning fields on the screen display or the printed page, even allowing users to create their own field tags to appear on the output. While the RECON system default will label an author field AUTH:, a searcher may choose to call it BY: on the output. This interactive report generation capability makes it easier for users to create customized bibliographies based on patron's needs. They can store frequently used formats to be recalled at any time.

Other areas of concern mentioned in the March article were user interface and customer support. As always, RECON offers four experience levels on which to search, and the

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RECON ENHANCEMENTS *(continued from previous page)*

error messages are of a level of detail appropriate to each. They are Beginner, Intermediate, Expert, and No Help. User support is available at all times when RECON is on-line, Monday through Friday, 8:00 a.m. to 8:00 p.m., e.t., excluding holidays.

RECON is not ready to provide eye-catching graphics that will entertain users through search sessions. But fundamental searching enhancements are always under consideration for future implementation. As some RECON searchers participate in Beta testing for RECON II, their input will be used to make the system stronger before its general release. Already, RECON designers are assessing the feasibility of building some type of context-sensitive, hypertext links into the online HELP facility, and interactive screen capability so that technical and reference analysts may assist users live. Such suggestions may or may not be found to be useful to RECON searchers, and therefore supported, but enhancements are never out of the question.

No system will ever be all things to all people, but RECON will continue, as always, to adapt to users' changing needs as the information industry and the nature of searching change.

NASA STI FOR THE 1990s *(continued from page 2)*

An initial step to networking is linking NASA/RECON with the National Space Science Data Center (NSSDC) and the Space Physics Analysis Network (SPAN) to allow mutual access by users. Hardware and software interface at the NASA STI Facility will permit direct connection to the LAN at NASA Goddard Space Flight Center (GSFC). Thus users of NASA/RECON who find references to a particular database may "hotkey" to the NSSDC Master Directory and be led via the network to access that database. Similarly, a NSSDC user of a database on the SPAN network may switch to NASA/RECON and search for references to documents about that database.

STI networking efforts will emphasize coordination of existing networks and clearinghouses, either within the aerospace community or related to it. The NASA Office of Space Flight (the Space Shuttle program) and the Office of Space Station operate information systems that can be accessed via links similar to the NASA/RECON-NSSDC link. Systems for accessing materials data and wind tunnel data are candidates for networking. A clearinghouse for applied and engineering data to complement NSSDC's activities for space science will be explored.

Medical Texts Online at KSC

The Kennedy Space Center Office of Biomedical Operations and Research has developed the Clinical Practice Library of Medicine (CPLM), working with the University of Florida.

The CPLM consists of a personal computer, high resolution color graphics monitor, and a 300-megabyte hard drive. Loaded in the drive is a program that contains nearly all the text and graphics of seven medical reference books. All together, the books weigh more than 20 pounds and contain about 15,000 pages of text.

The opening screen of the CPLM program shows a drawing of the references on a bookshelf. To refer to one of the documents, the user simply moves the computer cursor to one of the simulated books and hits the return key. A full document search can be initiated by centering on another icon.

Through a series of prompts, the CPLM system directs the doctor to establish the facts, or what he knows about the patient, such as sex, age, and race. The patient's symptoms are added to the inquiry by an OR or AND statement. Since the system can interpret segmented statements in English, a typical inquiry might be MALE, AND ABDOMINAL PAIN, AND VOMITING AND FEVER.

The inquiry establishes the combination of key words that the CPLM system uses to search all of the references. The system first looks into the dictionary and thesaurus in its memory to find similar words. It then displays a list of possible medical conditions to fit the symptoms stated in the inquiry.

When the reference comes up on the screen the user will see it just as he would if he were to look it up in the book. But what he sees will be even better than looking at a printed page because of the quality graphics and zoom feature. With the zoom, the user can enlarge drawings when he or she needs a closer look at a cell structure, for example.

Since the system is compact and lightweight, it can be used on practically any desk in any office, including the Space Station Freedom, a Navy ship, or a doctor's office.

(From KSC's Spaceport News, March 1990)

For further information, call Dr. Paul Buchanan, KSC, Operations of Biomedical Operations and Research

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GIQ Available to NASA Community

The January/February/March 1990 issue of the *STI BULLETIN* ran an announcement of a series of papers covering the NASA STI Program being published in the Spring 1990 issue of the *Government Information Quarterly*. Single copies of this particular issue are available to NASA STI users free of charge from the NASA STI Facility. Contact Document Services at (301) 621-0147. ☎

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The STI Facility now has the capability to provide color copies of technical reports containing functional color.

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The **STI BULLETIN** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Jackie Streeks at the address below, or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT, Washington, DC 20546, (202) 755-1246.

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STI BULLETIN

SCIENTIFIC AND TECHNICAL INFORMATION DIVISION

Revitalizing the NASA STI Program

General Elmer Brooks, Deputy Associate Administrator for the NASA Office of Management, gave the keynote talk at the NASA STI Managers meeting held at NASA Headquarters, April 24-25, 1990. Excerpts from his talk are presented.

This is a particularly auspicious time for the NASA STI Program, and I believe that the information and ideas we can share with each other over the next two days will add considerably to the quality of that Program.

Scientific and technical information is an integral part of the research & development (R&D) process. It is both the raw material and the end product of R&D. According to the Office of Technology Assessment (OTA), scientists and engineers spend one-quarter to one-half of their time on STI related activities. Of NASA's 120,000 employees and contractors, 38,500 are scientists and engineers; and the value of time spent on STI is immense. According to the Department of Energy, one-fifth of their annual R&D budget—1 billion dollars a year—is spent on STI.

A recent survey of aerospace scientists and engineers sheds new light on the dominant role of STI in the aerospace industry: On the average, respondents spent about 35 percent of their time communicating information to others and 31 percent working with technical information received from others. Obviously, STI is an indispensable part of the R&D infrastructure, yet it is inexpensive when com-

pared to the total R&D budget. Return on STI dissemination is very high: according to OTA, as a rule of thumb, each dollar spent on federal STI dissemination generates a direct benefit of at least 2 to 5 dollars to users. Online databases such as NASA/RECON are especially highly leveraged.

NASA expects to see an increase in R&D appropriations over the next few years, and we need to be prepared to adjust to the associated increases in STI production and dissemination. At the same time, we are witnessing exciting advances in information technologies that will help us continue to meet the mission of managing NASA's information resources. Dissemination of STI is being transformed by the revolution in electronic information and telecommunications technologies. The STI community is one of the heaviest and most advanced users of computers. Over the next 3 to 5 years, use of printed and filmed STI is likely to decline, while the use of electronic formats will likely increase dramatically. These new technologies will allow us to develop a vital STI program which meets the needs of NASA's scientists and engineers and managers as well while remaining sensitive to budget constraints.

During the past decade, the NASA STI program has suffered a downturn in resource support, both personnel and dollars. STI staffing levels have fallen by 54 percent. The STI budget has not kept up with inflation.

(continued on page 7)

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National Aeronautics and Space Administration
Office of Management
Scientific and Technical Information Division
Washington, DC 20546
1990

Focus On ... *A product or service available through the STI Facility.*

Foreign Technology Bibliography Series

The technical literature covered in these bibliographies include research and development (R&D) performed by the Japanese, Soviets, or the NATO countries of continental Europe. Each bibliography assembles references to unclassified/unlimited, unclassified/limited, and classified/limited reports and journal articles announced in the NASA STI Database on an annual basis. The selected citations are available on NASA/RECON based on the user's affiliation status as registered with the NASA STI Facility. The purpose of this series is to assist NASA R&D efforts, and thus increase productivity throughout the NASA community.

FORMAT

Each entry in the bibliography consists of a standard bibliographic citation usually accompanied by an abstract. The limited distribution citations do not include an abstract. Entries are arranged by the 10 major subject divisions and 76 specific subject categories found in STAR.

The Soviet and Japanese bibliographies include six indexes – subject, personal author, corporate source, contract, report, and accession number; the European bibliographies include a seventh index – foreign technology.

SCOPE

The Foreign Technology Bibliography series includes:

- European Foreign Technology
- Japanese Foreign Technology
- Soviet Foreign Technology
- Space Station Foreign Technology

European and Soviet Foreign Technology Bibliographies

Selections in these bibliographies are based on the Aeronautical Engineering, NASA SP-7037, profile supplemented with other topics of interest as follows:

European – space commercialization; mathematics; fluid mechanics; composite materials, materials processing, and fatigue; physiology of flight and human factors; microcomputer applications; electromagnetic wave propagation; and space policy and international cooperation.

Soviet – computer systems and man-machine systems; plasma physics; lasers; optics; chemistry and materials; remote sensing and climatology; microgravity applications; polymers, and crystal growth; and space sciences, space biology, and bioelectronics.

Japanese Foreign Technology Bibliographies

Items of Japanese origin and any item whose content deals with Japanese technology are selected for this series. Primary subjects of interest include: lasers; electronics; semi-

conductor materials, crystal growth and materials processing; chemistry and materials, and computer systems and robotics.

Space Station Research and Engineering

Selections in these bibliographies, accessioned from 1983-1987, are based on R&D related to the design and development of technology, configurations, and procedures that enhance efficiencies of current and future versions of a space station. Specific subjects of interest include:

European – design analysis, development, and operations of major systems and subsystems; servicing and operations support requirements for current and future European space station applications with emphasis on artificial intelligence and robotics, power generation and storage, microgravity materials for structural applications, and life support systems. European participation in international space station technology is also included.

Soviet – design analysis, development, engineering operations, and utilization of manned and unmanned Soviet space stations with emphasis on SALYUT and MIR. In addition, various spaceborne experiments for use in space commercialization and space manufacturing are included. Future missions of Soviet space stations are covered including the international cooperation of the U.S.S.R. with other nations.

Soviet, European and Japanese Space Station Biomedical Research

Selections describe the current and future biomedical research related to the Soviet, European, and Japanese space stations. Subject coverage includes the human physiological, psychological, and social responses to the conditions of living in the space environment; limits of human tolerance to the actual and potential hazards of weightlessness; behavioral implications of biomedical changes; work requirements and assessment of human performance; nutritional requirements; interpersonal dynamics; stress effects on respiratory, visual, and auditory systems; bioastronautics, life sciences research; life support systems and survivability; and spaceborne medical experimentation.

FREQUENCY

The foreign technology bibliographies in this series are issued annually beginning with 1984. Current Japanese, European, and Soviet Aerospace Science and Technology bibliographies for accession year 1989 will be issued in late 1990.

AVAILABILITY

The bibliographies in this series are limited to U.S. Government agencies and U.S. Government contractors only.

Impact of Aerospace Reports — Survey Underway

We know reports of research and development (R&D) results are important in carrying out further R&D; but, we are not sure how they are used, nor who makes the most use of them. We have anecdotal verification of instances of a report preventing duplication, or making possible a quick leap forward.

A more factual approach is being taken in a study supported by NASA, Code RF and Code NTT, and by the U.S. Air Force. The survey is being undertaken by Thomas Pinelli, an STI staff member at the NASA Langley Research Center, and John Kennedy of Indiana University.

Four phases are projected:

Phase 1. Study of U.S. aerospace engineers and scientists. Surveys are complete, and data analysis is underway.

Phase 2. Study of U.S. aerospace librarians and technical information specialists as information intermediaries. Survey is in the final stage of development.

Phase 3. Study of U.S. aerospace university students, faculty, and information intermediaries.

Phase 4. Study of aerospace engineers, scientists, and students outside the United States.

For more information, call Thomas Pinelli at 804-865-2491, FTS 928-2491. ☎

New Publications

Surface Topography of the Greenland Ice Sheet from Satellite Radar Altimetry (NASA SP-503), published by the STI Division and the Goddard Space Flight Center. Provides the first accurate topographic map of the Greenland ice sheet, from more than 80,000 individual measurements of surface elevation made by the radar altimeter on board the Seasat satellite. Paperbound, 106 pages, color and black-and-white photographs, and 17 oversized maps in a hard slipcase.

(Avail: GPO for \$37.00;
GPO Stock No. 033-000-01071-1)

Exobiology in Earth Orbit (NASA SP-500), published by the STI Division and the Ames Research Center. Reports the status of the scientific investigations that can be undertaken in the field of exobiology using instruments in Earth orbit. Paperbound, 126 pages, color photographs.

(Avail: GPO for \$6.50;
GPO Stock No. 003-000-01057-5)

Space Shuttle Avionics System (NASA SP-504), published by the STI Division and the Johnson Space Center. Traces the origins and evolution of the system, beginning in the early 1970s; outlines the requirements, constraints, and other factors which led to the final configuration; and provides a comprehensive description of its operation and functional characteristics. Paperbound, 74 pages, illustrated, with a diagram of the system.

(Avail: GPO for \$8.50;
GPO Stock No. 033-000-01079-6)

New Thesaurus Terms

Subject terms recently added to the *NASA Thesaurus* are listed below. These terms are currently available on NASA/RECON. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103. ☎

ACROBATICS

Transferred to AEROBATICS

ACROBATICS (AIRCRAFT)

Use AEROBATICS

AERIAL ACROBATICS

Use AEROBATICS

AEROBATICS

ASTRONOMICAL CATALOGS

BLACKBIRD AIRCRAFT

Use SR-71 AIRCRAFT

EARTH MAGNETOTAIL

Use GEOMAGNETIC TAIL

GEOMAGNETIC TAIL

SN (RESTRICTED TO THE EARTH MAGNETOTAIL)

New Scope Note

MACROMOLECULES

MACROMOLECULES

Use MOLECULES

Deleted

OPTICAL CORRELATORS

PEGASUS AIR-LAUNCHED BOOSTER

PLANETARY MAGNETOSPHERES

SN (EXCLUDES EARTH MAGNETOSPHERE)

New Scope Note

Networking for Libraries Information Superhighways

The success of INTERNET and of NSFNET (funded by the National Science Foundation) spurred a vision of a National Research and Education Network (NREN) which would serve as a superhighway for data—the telecommunications equivalent of the Federal Interstate Highway System. Senator Albert Gore's proposed legislation (the "National High-Performance Computer Technology Act of 1989") envisions the NREN as an integral part of a program to promote advanced computing technologies.

Gore's bill directs the National Science Foundation (NSF), in cooperation with such agencies as the Departments of Defense, Energy, Commerce and NASA, to provide for the establishment of a national 3 gigabit/second computer network by 1996. (A gigabit is one billion bits.) Most current networks have bandwidths from less than 56,000 bits/second up to approximately 1.56 megabits/second, and NSFNet will be able to move data at 45 megabits/second. NREN represents an increase of at least 2,000 times over the current bandwidth. Such a network could move 100,000 typed pages or 1,000 satellite photos every second.

EDUCOM and the National Research Council have promoted the NREN as a primary objective. Other academic and research networks have established the value of computer networks to a wide range of users in research and higher education for mail communications, conferencing, and voluntary electronic publishing.

Many of the regional networks and additional connected state networks have been encouraging use beyond scientific research. The promise of service to a broader educational community added further justification to the public investment and would ensure a broad base of political support.

Broadening the Library Vision

While their vision broadens, the library community has expressed growing interest in Internet and NREN. Librarians have long been familiar with the use of networks to access regional and national bibliographic databases, notably OCLC and RLIN. The American Library Association has offered an electronic mail and bulletin board network, ALANET. There is presently sufficient degradation of connections through the regional networks to preclude production use of the NSFNET as a replacement for the library networks. The prospect of integrating networks in an upgraded, well-managed, high-bandwidth NREN is enticing to libraries.

Building NASA's Global STI Network

NASA's Scientific and Technical Information Division is undertaking as one of its major initiatives in the next several years to build a worldwide network—NASA STINET. The Project Director is Judy Hunter, who comes to the STI Division with a strong background in networking and gateways in the Department of Defense.

The goals of the project are to:

- Provide access to STI data worldwide
- Reduce the duplication of data between STI databases
- Promote cooperative agreements between agencies
- Make the connections transparent to the user
- Provide a "one-stop shopping" environment for the user

The project will:

- Determine available NASA communications capabilities
- Develop cooperative agreements with NASA communications
- Cooperate with other federal agencies in gateway development
- Design and implement a prototype for the NASA STI gateway

NASA Networks

NASA's global STI Network will build on networks that are already in place and rapidly evolving.

Internet is the collection of U.S. networks using the DOD standard communications protocols—Transmission Control Protocol/Internet Protocol (TCP/IP)—upon which a suite of application protocols functions, such as remote login, file transfer, and electronic mail.

NASA Science Internet (NSI) is a full-service packet-switched consolidation of networks that provides remote login, electronic mail, and file-transfer services utilizing both standard (i.e., TCP/IP) and vendor-dependent (such as DECnet) protocols, with application gateways between protocol groups. NASA's NSI is a member of the Internet.

The Space Physics Analysis Network (SPAN) is one of the components of NSI,



How Your Electronic Information Exchange Standards

Standard Generalized Markup Language (SGML), allows for the transfer, retention, and multiple reuse of text with long-term value, such as STI. Documents created within the SGML standards can be transmitted through any network with existing communications software, and can be interpreted by electronic publishing systems at the receiving site. SGML is misnamed as a language; it is actually a set of rules about how to describe and reuse information.

Government Open System Interconnection Profile (GOSIP), is a site of services, protocols, and features for data communications compatibility of unlike computer systems. GOSIP uses the concept of a "profile" as a guide to selection of services and features at the users discretion. GOSIP provides a "portfolio" of tools and capabilities for the choice of users, computer systems managers, and network implementors.

Computer-Aided Acquisition and Logistic Support (CALS) is an information-resources integration program within the Department of Defense. It strives to link stand-alone systems with automated industry-based (ign, manufacturing, publishing, and logistics systems.

managed at the Goddard Space Flight Center. SPAN is a private wide-area DECnet that provides connectivity to more than 2000 DECnet nodes, as well as to numerous other DECnet networks.

NASA Science Network (NSN) is the other component of NSI. NSN is a TCP/IP network that connects to more than 1000 networks or subnetworks, each of which may connect dozens and more computers, including those associated with the National Science Foundation's NSFNET. NSN is an effort to accommodate technology diversity, new technology data systems, and nonhomogeneous computer systems.

Program Support Communications Network (PSCN) is managed by the Marshall Space Flight Center. A NASA circuit backbone, PSCN is common to both SPAN and NSN networks.



National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards, NIST is deeply involved in the development, testing, and adoption of standards for the federal government. NIST has taken on the mission of coordinator in many technical areas of interface between the federal and industrial worlds, as in CALS and SGML.

JSC Announces LIFENET

The Medical Sciences Division of the Johnson Space Center has established LIFENET for the use of the biomedical research & development community. A menu driven, user friendly system, LIFENET requires no training or reference to a user manual to log on and use the system. The LIFENET communications capabilities center around the capability of "Automatic Routing Across Networks." This feature is designed to reduce the difficulties that are normally associated with communicating across electronic networks. LIFENET username mail routing capability is designed to be relatively transparent to the user of most systems. All that is needed is the recipient's LIFENET username or some part of the recipient's name. Currently, TELENET/TELEMAIL, SPAN/VAXMAIL, ARPANET, BITNET, TEXNET and others are interconnected in this way on the LIFENET system. LIFENET makes available user-posted bulletin boards, electronic mail, file transfer, seminar announcements, and calendar of events. For more information about LIFENET, call Susan Lock, 713-480-5939. ☎

Aero Science and Technology Data Locator

A major component of the NASA STI Global Network will be the Aero Science and Technology Data Network—AERONET. An initial step is building the AERONET Data Locator. Descriptions of more than 400 aerothermodynamic data sets from the Space Shuttle program are already available on NASA/RECON. An active program for including descriptions of wind-tunnel data taken at NASA facilities is being explored. Aeronautical data reported in documents referenced in the NASA STI Database will be included in the AERONET Data Locator where sufficient description is provided.

RECON II PREVIEW: A BRIEF TOUR OF THE PRIMARY COMMANDS

The transition from one system to another always leaves an interim period when users are not fully indoctrinated into the new system, but have moved partially away from the old. The years 1958 to approximately 1962 represented such a time when the National Advisory Committee on Aeronautics closed out projects and finished reports, and the National Aeronautics and Space Administration had begun research and development activities of its own. The RECON to RECON II transition stands in the center of that phase now, when some users have been trained, some are in the process of being trained; some have access to the new system and some don't. Information concerning RECON II's release date and training schedule will be announced in future issues of the *STI BULLETIN*, and is online under RECON I's HELP NEWS screens. The system is scheduled to be fully implemented this fall.

To help provide a bridge between RECON I and RECON II, the following is a basic reference guide. It lists only those commands that are most frequently used in an average search session. Keep in mind that other commands are available in RECON II, and they are fully documented in the training workbook and the User Reference Manual. Below we have listed 1) the command name; 2) a brief description of the command's function; and 3) an example of the command's syntax, using the shortest acceptable form of the command. They are listed in alphabetical order.

Remember that this is meant only to be a brief guide. It does not attempt to cover every function that the commands listed below can perform, nor does it include all of the commands available in RECON II.

ADDRESS, END

Assign a secondary address for internal routing.

AD [System prompts for internal routing address - no parameters are necessary.]

BEGIN

Initiate a RECON search session.

BE [No parameters are necessary, though you may specify a file collection. If you don't, you will be placed automatically in your default file collection.]

COLLECTION

Define the files and years to which your search session will be restricted. Name and store the collection for later use.

COL STAR IAA 1987-1990 mycollection.c

CURRENT

Display the status of your in-progress search session.

CU [No parameters are needed, but you may specify individual elements (i.e., date).]

DELETE

Remove one or more stored definable features or sets, (i.e., a user-defined file collection).

DE mycollection.c [or] DEL S1

DISPLAY

View the records on screen from sets you have created.

DIS S1 [or] DIS S1 1-10

ESCAPE

Terminate a help or tutor session.

ES [No parameters are necessary.]

ENVIRONMENT

Define, name, and store a search universe including collection, format, experience level, and default mnemonic.

ENV mycollection.c myformat.f beginner au env1.e

EXPERIENCE

Select a level of help from beginner, intermediate, or advanced.

EXPE advanced

FIND, SELECT, SEARCH, COMBINE

Select records according to your criteria; create sets.

FI at ax utp=(comets or stars) and au=(Sagan, C. or Sagan, Carl) not S1

FORMAT

Customize screen displays and prints of records. Name and store the format for later use.

FOR acc =10;utp;title +5;m myformat.f

FREQUENCY

Count and rank order the number of occurrences for field values in a set.

May execute a FREQUENCY against a set for various fields.

FR S1 [or] FR S1 au

HELP

Display HELP screens.

HE [Optional parameters.]

HOME

Return to the main menu of the current HELP topic.

HO [No parameters needed.]

KEEP

Create a temporary set of citations manually selected during browsing.

K S4 [or] K 87n12345

LIMIT

Restrict an existing set to specified files and years.

LIM S1 STAR 89

MNEMONIC

Change the default search mnemonic from ST (subject terms) to one which you specify.

MN au

ORDER

Place an order online for a document to be sent and invoiced to you.

O 87n12345 microfiche copies=2 'J. Doe, Room 111'

PAGE

Move forward or backward through SCAN or DISPLAY screens.

PAG [or] PAG + [or] PAG -

(continued on next page)

Revitalizing the NASA STI Program

(continued from page 1)

Because of this lack of adequate resourcing, the central role this program serves in knowledge transfer is in serious jeopardy unless we take bold steps to turn the program around.

STI is the lifeblood of scientific advancement and technological innovation, and provides the information platform for global leadership. This, then, is our challenge: To revitalize the NASA STI Program and to give STI the priority that it needs here at NASA.

This revitalization will require great strides forward. However, we have already begun taking a few small steps in the right general direction! Resource levels remain a problem, but in the past few months the STI Program's problems and potential have attracted attention at the highest levels within NASA and from Congressional groups also.

As far as staffing is concerned, the STI Program is being allowed to fill vacancies resulting from attrition. This is a change from recent years when vacated positions were lost to the program. In addition, a headquarters-wide personnel

survey will be conducted this year. We hope this will bring some relief to the STI Program.

As position allocations permit, additional staff will be added to address long-range policy and planning issues and to explore new information technologies. This last capability-technology exploration-is particularly important. New technologies may be the answer to handling the overwhelming amounts of data produced and used by NASA. However, many if not all of these new technologies are extremely complex and expensive, so we must carefully determine which are cost-effective and mature enough to warrant their incorporation into the program.

A proposal to reorganize the NASA Scientific and Technical Information Division has been approved and is in the process of being implemented. The new organization will include a User Services branch to validate user requirements and help institute new services and improve existing services. The STI Division is currently working on a long-range strategic plan to address some of these problems and opportunities.

Reports to be Received from Canada

A working session to coordinate the processing of Canadian input to the NASA STI Database was held recently at the NASA STI Facility. Bernard Dumouchel and Frank X. Gagne represented the Canada Institute for Scientific and Technical Information (CISTI), NASA STI partner in the national-level STI exchange agreement which concluded with Canada in May 1989. The Canadians estimate that they will be processing 600 or more technical reports annually for NASA.

NASA Thesaurus Terms for FEDIX

NASA STI Division is cooperating with the HQ Educational Affairs Division in NASA's participation in the FEDIX project. FEDIX is a system of online databases providing information on federal government programs of interest to those who want to apply for an R&D grant. FEDIX contains descriptions of the Department of Energy programs. Information on Office of Naval Research and NASA will be available online in 1990. It is anticipated that other government agencies will soon be providing descriptions of their programs. The STI Facility will prepare a list of terms covering NASA's R&D programs to assist persons searching NASA entries. For further background on FEDIX call Sherri McGee, 202-453-8346. ☎

RECON Command Preview

(continued from previous page)

PRINT

Order an overnight, offline print of the citations you specify.

PR S1 [or] PR S1 1-10 myformat.f [or] PR 87n12345-87n12400

RELATE

Display a thesaurus tree structure for terms you specify.

REL astronomy [or] REL RT comets

RETURN

Return to a previously invoked HELP screen from live RECON.

RET [No parameters needed.]

REVIEW

Display a list of stored queries, definable features, submitted requests, or set history.

REV collections [or] REV sets

SCAN, EXPAND

View the indices for a field, for values alphanumerically adjacent to one you specify.

SC gamma rays [or] SC Sagan

SORT

Re-order citations in a set according to criteria you supply, in ascending or descending order.

SO S1 au (descending)

TUTOR

Enter the online tutorial.

TU [No parameters needed.]

UNSORT

Return a sorted set to its original order.

U S1

National Aeronautics and
Space Administration
Code NTT
Washington, DC
20546

Official Business
Penalty for Private Use, \$300

THIRD-CLASS BULK RATE
POSTAGE & FEES PAID
NASA
PERMIT No. G27

L1 001 STIBUL 900713S095532A
NASA
SCIEN & TECH INFO FACILITY
ATTN : JUNE SILVESTER
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NASA Resumes Publication of *STAR*

NASA is pleased to announce the resumption of the printing of the *Scientific and Technical Aerospace Reports (STAR)*. We would like to thank the scientific and technical information community for its support and cooperation during this difficult period. As you know, we have been maintaining the computer database up to date in order to shorten the start-up cycle. We will be printing all the back issues and the cumulative index for 1989.

REMINDER:

Stored Searches on RECON

Recently, RECON users received a mailing asking them to review the searches they have stored under their IDs. Once again, we ask that you continue to review regularly your stored searches in order to maximize storage space. At present, RECON users enjoy being able to store searches to be executed at will, free of extra charge. Many systems charge users to store searches. If you regularly use your stored searches, by all means keep them. If you find that some are no longer of value, or have not been updated or executed in a year or more, please delete them from the system.

Thanks!

Next Issue ...

Look for information regarding the possibility of subject switching the older subject terms on file collection G to NASA *Thesaurus* terms.

STILAS Library System

The Scientific and Technical Information Library Automation System (STILAS) is a system developed under the auspices of the Defense Technical Information Center (DTIC) for the purpose of accommodating government libraries that deal with both MARC and COSATI records. Two prototypes were developed—one designed for small libraries and another for medium-sized libraries. STILAS performs the traditional library functions of acquisitions, cataloging, circulation, and serials control and will interact with the DTIC database, DROLS. Systems have been sold to the Air Force Weapons Laboratory, the Defense Nuclear Agency, the Redstone Scientific Information Center (two), NASA Langley Research Center, and DTIC.

Inquiries regarding STILAS should be directed to Barbara Everidge, NASA HQ, STI Division, 202-755-1204. ☎

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ATTN: Registration Services.

STI BULLETIN

SCIENTIFIC AND TECHNICAL INFORMATION DIVISION

Full-Text Databases—NASA STI Division View

Cooperating with other federal agencies in future developments is a basic component of NASA strategic planning. Working groups play a key role, such as the Standards Working Group established by CENDI—the interagency group of STI managers from the Departments of Commerce and Energy, NASA, the National Library of Medicine, and the Department of Defense. Effective interagency implementation of new technology often takes years of planning. Before planning actually starts, projections, however tentative, have to be made by each agency, based on what it would like to do, and leavened by what it thinks manpower and money will permit.

Judy Hunter, a member of the NASA STI Division, Code NTT, and the CENDI Standards Working Group, submitted a response in early November 1990 to a CENDI initiative concerning full-text technology and anticipated activity related to the NASA STI Program. We would like to share highlights of her response with our users.

NTT has recently undergone a reorganization. New approaches are being formulated and new directions are being identified. **We are shifting our focus from an environment where we control information to one where we access information for the users.** We think we can do this if we participate in projects to test, evaluate, and prototype advances in digital input and retrieval technologies and if we develop a plan

to phase these advances into the NASA STI environment where applicable. We feel we can further expedite this integration process by establishing cooperative attitudes among the NASA Centers, NASA HQ, and other national and international agencies in order to share the time, effort, and expensive resources for the research and development of projects to support the electronic handling of data.

NTT has looked at current processes to determine where the technology can be consolidated now to provide a foundation for future enhancements and expansions. We look to promote cooperative projects with the centers where minor successes might encourage participation by other centers with similar interests and requirements. The initial projects will include capabilities currently in use at the participating sites that could be combined together to provide additional functionality.

One such project under development currently is to exchange electronic data between the Ames Research Center, NASA HQ, and the STI Facility. This project has been divided into two tasks. One task involves transmitting the Report Documentation Page (RDP) between Ames and the STI Facility. The second task involves transmitting the Document Availability Authorization (DAA) form between Ames, NASA HQ, and back to Ames. The DAA is used to approve dissemination of the documents. This portion of the project will involve

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National Aeronautics and Space Administration
Office of Management
Scientific and Technical Information Division
Washington, DC
1991

FULL-TEXT DATABASES*(continued from page 1)*

using the ODMS system, currently in use at Ames, to transmit the document over a wide area network (WAN). It will also involve using some sort of digital signature capability.

CD-ROM technology is being considered as a storage and retrieval medium for the National Advisory Committee on Aeronautics (NACA) file, and a multi-media project in conjunction with Lewis Research Center to demonstrate integration of video, online retrieval, and hypertext is being formulated.

An interagency partnership is under discussion which will allow NASA and DTIC to cooperate in future developments of the intelligent gateway and post processing technologies as well as in the digital document input and retrieval technologies. DTIC has developed an intelligent gateway system, the Defense Gateway Information System (DGIS). NASA is in the process of designing and developing a gateway system for the NASA user community. NASA and DTIC have agreed to work together on future developments.

In some instances, it makes sense for NASA to observe projects ongoing at other centers and/or agencies involving leading-edge technology. For example, NASA postponed the development of a project at the STI Facility for the input of documents into the NASA/RECON system for one year in order to observe projects underway at DOE and DTIC. This gives NASA the opportunity to benefit from "lessons learned" at other agencies.

There are too many issues that need to be resolved in the full-text arena for one agency to address them all adequately in a world of limited resources. For one thing, the scanning and OCR technology has not matured to a point where the input of documents does not require an extensive amount of editing. And although the integration of complex equations and illustrations with text is getting better, it continues to be a labor intensive process of keying the equations manually. Further issues about full-text retrieval are not yet adequately resolved, such as indexing. How do you index a full-text document? How does the end-user scan volumes of electronic data to get to the information he actually needs to accomplish his mission? How do you charge an end-user for all the data he accesses or do you charge him for the data he can actually use? How about the requirements to display and scan these documents?

NASA has a commitment to participate with other agencies and would like to "pool resources" with others who are addressing these complex issues.

Numeric Data Directories and Access Systems**U.S. Geological Survey**

The U.S. Geological Survey has developed a data management prototype on Arctic data which uses CD-ROM technology and a hypertext user interface. It is called Arctic Data Interactive (ADI) and consists of bibliographic information, Arctic datasets, and dataset documentation. It was originally intended as a directory, but the large capacity of a CD-ROM led to a decision to add other information resources and integrate the resources into an interactive system.

The CD-ROM has a table of contents, like the printed reference document, Arctic Environmental Data Directory (AEDD), but it is visually appealing. The "hot" screen can be touched to make the selection. It is not necessary to use a keyboard. When you touch a picture or title in the table of contents, a series of "buttons" appears at the bottom of the screen: source, description, format, coverage, location. The table of contents leads to full text reports with pictures, maps, and datasets. Searches can be done by keywords (Boolean), color pictures, and hyper KRS search card. The software is Macintosh Hypercard (or Toolbook for the PC), hyper KRS, and Macromind Directory. Every word is indexed using Hypercard. The disks are updated twice a year.

National Library of Medicine

The National Library of Medicine has dealt with the data directory problem in the ABIDE project. The approach was to use concurrent, window-based access to multiple systems, with directory assistance for choosing target databases (DIRLINE). GRATEFUL MED provides logon and search, and vocabulary assistance. Query-response history is carried across databases and across local sessions. There is copying across windows to build a query from earlier queries and responses.

*(continued on page 6)***Thanks to
Marshall Space Flight Center**

The STI Division would like to extend its gratitude toward Ms. Annette Tingle, Chief, Technical Information and Services Branch at Marshall Space Flight Center for all the arrangements she made for the annual STI Conference. Ms. Tingle created an outstanding agenda, lined up speakers for the conference, and made arrangements for hotel accommodations as well as many other details too numerous to list. Unfortunately, the conference had to be canceled because of budget constraints.

Again, thank you Annette!

New Thesaurus Terms

Subject terms recently added to the *NASA Thesaurus* are listed below. These terms are currently available on NASA/RECON. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA STI Facility, (301) 621-0103.

GADOLINIUM-GALLIUM GARNETS

HDTV

Use HIGH DEFINITION TELEVISION

HIGH DEFINITION TELEVISION

IMPROVED TIROS OPERATIONAL SATELLITES

Use ITOS SATELLITES

(This term was also transferred to ITOS SATELLITES)

MULTIGRID METHODS

OSPREY AIRCRAFT

Use V-22 AIRCRAFT

POROUS AIRFOILS

Use POROUS BOUNDARY LAYER CONTROL

SMART STRUCTURES

V-22 AIRCRAFT

WEST GERMAN SPACE PROGRAM

YLF LASERS

ZIRCONIA

Use ZIRCONIUM OXIDES

ZIRCONIUM OXIDES

News From ICSTI

NASA STI Division became a member of the International Council of Scientific and Technical Information (ICSTI). ICSTI activities in which STI Division will participate include areas of high current concern.

Interdisciplinary Searching

At its first meeting in Gatlinburg in May 1990, this new group set the objective to identify and describe the principal problems experienced by searchers of multiple databases seeking citations to documents that will provide answers to questions of an interdisciplinary nature, and to propose solutions to those problems. In establishing a work plan, the group has expressed its determination to concentrate its efforts on finding practical solutions than can be offered or recommended within the short term.

Electronic Publishing

In pursuance of its aim of monitoring and evaluating current developments in electronic publishing and transferring this expertise to ICSTI members, the group has:

- Organized the Gatlinburg technical session on Electronic Document Publishing.
- Finalized the first of five brief technical papers in preparation which are based on the experience of ICSTI members.

Numerical Data

Work is underway for the publication of the ICSTI Directory of Machine-Readable Numeric Databases. Compilation of the information by Chemical Abstracts Service is now complete and hard copy versions are being prepared by the Office of Scientific and Technical Information (OSTI) of the U.S. Department of Energy. The publication will be available by the end of 1990.

Multilingual Thesaurus in Geosciences

Under an agreement signed with Unesco, ICSTI and the International Union of Geological Sciences (IUGS), originators and copyright holders of the Multilingual Thesaurus in Geosciences (MT), have authorized Unesco to distribute the machine-readable French-English MT to Pan-African Network for a Geological Information System (PANGIS) centers.

Aeronet Data Locator Update— Wind Tunnel Descriptions Added

To assist aeronautical scientists and engineers who are looking for aerodynamics data, descriptions of wind tunnel test facilities are being added to the AERONET DATA LOCATOR (ADL). Descriptions of NASA Center wind tunnels will be added first. There are probably 75 active wind tunnels in NASA-40 or more at Langley Research Center, 20 or more at Ames Research Center, and 10 or more at Lewis Research Center. Entries for other wind tunnels throughout the world will be added next. For more information, call Robert Jack at the NASA STI Facility, (301) 621-0318.

DON'T BE LOST IN RECON II — LEARN TO NAVIGATE

Regular readers of the STI Bulletin have long been aware of the approaching release of RECON II. RECON II is alive, though still in preimplementation versions. We are now producing documentation to accompany the general release of RECON II. The principal piece of documentation is the User Reference Manual. Here is a preview.

One section of the User Reference Manual for RECON II is titled *Navigators*. The navigators, one for each of the 30 files in the STI Database, are tools that help you find your way around the files and form your search strategies.

NACA Historical File

As an example, let's look at the navigator for the NACA Historical File. The other navigators are set up this way, as well.

For ease of use, the format of each navigator displays the appropriate information in a self-explanatory manner. This includes the file name, file number, also called (alternate appellations), coverage dates—in this case, the publication dates of documents referenced in the file—and a note on how frequently the file is updated. (Coverage dates refer to accession dates in the other navigators.) A brief description of the file's contents, structure, origin, and any special features followed by the file collection designation and searching information completes the navigator.

File Name: NACA Historical File

File Number: 145

Also Called: H-10,000, H10K, 1H

Coverage Dates: 1915-1962

Frequency of Update: N/A, Closed File

File Description: The National Advisory Committee on Aeronautics (NACA) historical file consists of more than 100,000 catalog cards and technical notes which served as the library shelflist for the Committee's headquarters. This file contains reports from foreign and domestic government agencies and industries, published between 1915 and 1962 and accessioned in 1986 and 1987. NACA was active until 1958, when NASA took its place.

File Collection: T

Searching Information: Indexed to the NACA subject headings; original cataloging and abstracting. Text searchable: Unclassified Titles, Abstracts.

As its name suggests, a navigator is designed to help you find your way around in the file. You'll use the navigators as a reference to find out about each file: when you know the coverage dates of the NACA file, you won't be searching for a document published after 1962, but you will know that this file's coverage extends beyond 1958 when NASA began.

After the basic information, the navigator presents a typical citation from the file. This citation conveys visual information about the file's contents and structure. In the citation here, you see the accession number, report number, publi-

cation date, and the page count; followed by the title, author, originating corporate source, and list of subject terms. This particular file also contains fields for a shelflist number (SLN) and a miscellaneous note (MCN). The citation is presented in RECON II's default format, or format 2. (NOTE: The citation shown here is from RECON I; in RECON II some elements may look different.)

Typical Citation

87H10200 RPT#: SERIAL W-U-ENG-57-8938-3
AUGUST 23, 1943 PAG: 44 p., illus.
UTTL: Conference on chrome-plating of worn cylinder barrels as a salvage procedure
AUTH: A/JOHNSON, ROBERT L.; B/SHAW, R.W.
CORP: AAF, MatCom, (Wright Field) (E.D.M.R.)
SLN: N-9885
MISC: LFPL
SUBJ: /Protective coatings, Chrome-Engine cylinders, Electro-deposited. /Engine cylinder barrels. /Specifications-Engine cylinders (Amer.). /Research-NACA (Amer.).

You can look in your manual and see the elements of a typical citation in the file. This overview will help you plan your search strategy.

Field Mnemonics

The final section of the navigators for all searchable files is *Field Mnemonics*. Here you'll find listed all text searchable fields and all term searchable fields with their search mnemonics and notations of any special conditions that pertain to this file. Where applicable, nonsearchable fields are also listed.

Search Field Mnemonics:

TEXT SEARCHABLE FIELDS	SEARCH MNEMONIC
Unclassified Title	UTP
Abstract	AX
Corporate Source	CRP
Miscellaneous Note	MCN
Shelflist Number	SLN
Subject Index Terms	IND
Accession Number	ACC
Personal Author	AU
Publication Date	PDT
Report Number	RN

NONSEARCHABLE FIELDS	SORT MNEMONIC
Pagination	NOT

NOTE: The information contained in the file was extracted from the NACA shelflist cards and not from source documents. The subject terms are cross-referenced with the catalog cards and not with the NASA Thesaurus. The corporate name entries do not correspond to the Corporate Source Authority List (CSAL), and all text fields are single-word searchable.

The RECON User Reference Manual will be available when RECON II is available online.

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75 Years of Aeronautics R&D

Basic research is never old—work done under the auspices of the National Advisory Committee for Aeronautics (NACA, 1915-1958) in the 1920s, 1930s, 1940s, and 1950s is still important. Access to documents resulting from that work can save years of effort and millions of dollars. Areas of research and engineering covered in the NACA file are indicated in the list of NACA-NASA aeronautical achievements.

NACA/NASA Aeronautical Contributions

1920	1st NACA wind tunnel—Langley	1952-1968	X-15 research aircraft
1926-1929	NACA Cowling developed and tested	1960s-1970s	Lifting body research
1928	High-speed airfoil program begins	1960-1969	Runway grooving
1930s	Tricycle landing gear	1966-1970	Noise reduction through nacelle design
1935	High-lift flaps	1968-1984	Fly-by-wire
1941-present	Icing research	1970s	Winglets
1940s	Flush riveting	1970s-1980s	Highly Maneuverable Aircraft Technology (HiMAT)
1940s	Transonic Wind Tunnel development	1973-1983	National Transonic Facility opened at Langley Research Center, 1983
1945-1947	Jet engine research, high speed aerodynamics leading to the X-1	1975-1989	Advanced Turboprop project
1945	Variable sweep wings	1987	Numerical Aerodynamic Simulator opened at Ames Research Center
1946-present	Oblique wing research		
1951	"Area Rule" concept developed		
1952-1957	Blunt-body/high-drag nose cone		

NACA Documents Database Project

PROJECT BACKGROUND

The NACA collection consists of 15,000 to 25,000 NACA documents and 85,000 to 150,000 non-NACA documents. Approximately 15,000 NACA and 85,000 non-NACA bibliographic records have been entered into the NASA STI Database to make this collection available online to users. Users have complained that there are errors and other problems in searching these NACA records. The records for a portion of the non-NACA documents are on cards, in report series order, at the NASA Scientific and Technical Information (STI) Facility. Some of the reports have been declassified over the years but still carry the classified markings.

Portions of the NACA archive are available at the STI Facility; other documents are available from other NASA centers, universities and commercial enterprises. However, the number and location of the NACA and non-NACA documents extant are not totally known at this time.

NASA would like to make the entire NACA collection available to the aerospace community. Because the NACA collection is a closed set, the NACA database is a reasonable candidate for publication and dissemination on CD-ROM. Alternately or additionally, the complete NACA database could be made available online. NASA further

would like to define and/or develop a NACA archive from which to provide the complete text of requested documents to fulfill the objectives of this project.

Before putting the NACA collection online and/or on CD-ROM, the quality of the database must be brought to a level acceptable to the users.

PROJECT SCOPE

Thrust of the project will be to determine:

- Number of NACA and non-NACA documents.
- Availability of bibliographic records for those documents.
- Location and availability of the documents themselves.
- Level of standardization of cataloging for those documents already cataloged.
- User requirements for a useful NACA database.
- User requirements for a useful NACA archive.

Methodologies will be recommended for (1) developing and/or upgrading electronic bibliographic records to a level acceptable to the users (as determined in Item 5 above); and for (2) defining and/or developing the associated NACA archive.

NUMERIC DATA DIRECTORIES...*(continued from page 2)*

Knowbots, are exchanged between client and databank; the directory being treated like a databank. The *knowbot* (knowledge robot) is executable software that is transmitted between workstation and databank. Flexible architecture provides the option of either residing on one computer or being connected to a network. The system operates with a mouse or keyboard and a "hot" screen, filters out duplicates in post processing, and can be hooked into a larger network.

Directory of Information Resources Online (DIRLINE) is a directory of organizations providing information in specific subject areas. Sources of data are the Library of Congress' National Referral Center (NRC) and the National Health Information Clearinghouse (NHIC) database. DIRLINE can be searched by organization name, text words, or subject-related keywords, and is updated quarterly.

Directory of Biotechnology Information Resources (DBIR) offers researchers and businesses easy access to a wide array of information about national and international biotechnology resources.

Defense Technical Information Center

Defense Technical Information Center (DTIC) began Multi-Information Data and Analysis System (MIDAS) as a post-processing of bibliographic information from a variety of databases. It provides for statistical analysis, eliminates duplicates, and allows reformatting. MIDAS will be developed to handle numbers, graphics, and full text. The objective is to get more involved with scientific and technical numeric databases.

DTIC's role for improving access to numeric data includes:

- The online High Temperature Materials Properties Database, already available through the Gateway, uses a common command language and expert systems.
- A clearinghouse of databases in other media, such as PC-based and magnetic tape.
- Online and PC-based directory of resources.
- Identifying data for computerization, including data in the research laboratories.

A data user needs assessment was sent to 18,000 users—1600 responded. Results from 1250 responses have been tabulated. Military (65%) and industry (29%) were the principal respondents, mostly engineers (1000), split between project management (+500), research (500), and testing (+300). Half searched for materials properties numeric data. A quarter did not search for numeric data at all; almost half had searched 1 to 5 times, and 25% had searched from 6 to more than 20 times. Nine out of ten had access to a computer.

DTIC has a directory file of 650 databases of which 150 are numeric.

National Technical Information Services

National Technical Information Services (NTIS) is concerned with referral, access, and delivery of data files. NTIS leases its databases to provide access. It also provides NTIS data access products. Services include catalogs of data files; *Government Reports, Announcements, and Index (GRA&I)*; NTIS bibliographic database; *CenterLine Newsletter*.

Data files are available in electronic media, paper and microfiche media, data directories and data referral databases from other agencies, direct user access to other agencies' data files, NTIS delivery of data from other agency systems on demand (Federal Reserve).

NTIS also provides electronic media production brokerage services for other federal agencies: system developments to provide better access to distributed STI resources; technical assistance and production services to federal agencies for compact disks, magnetic tapes, diskettes, and digital tapes.

Data types by source include laboratory data and survey data—numeric, statistical, and textual—available on magnetic tape, floppy diskette, and CD-ROM. They include original data, derived or aggregated statistics, qualitative or subjective analyses, etc., statistical classification, and manuals and guides.

The Federal Computer Products Center collects, announces, and provides public access to a wide variety of computer products produced by the U.S. Government, including software, data files, and databases.

The major data collections reflect a variety of sources, from National Center for Health Statistics and Federal Communications Commission to Department of Defense and Federal Reserve Board. The Environmental Protection Agency (EPA) National Computer Center is an example of how federal data is made available online through an arrangement with NTIS. NTIS handles account establishment, monthly billing, and collection. EPA can allow access without administrative problems. Customers gain direct online access.

Have You Moved?

The NASA Scientific and Technical Information (STI) Facility maintains the mailing lists and address file for most of the NASA network. In order to ensure the timely receipt/delivery of NASA products and services, it is very important to maintain complete, accurate and up-to-date addresses and contact points for each user registered with the NASA STI Facility.

Due to the recent circularization many address changes have been reported. So that we can continue to deliver our products and services efficiently, please provide us with any unreported or additional changes on the form below and mail to:

NASA Scientific and Technical Information Facility
Attn: Registration Activity
P.O. Box 8757
BWI Airport, MD 21240

Facility ID No.: _____ Telephone No.: _____
Organization: _____
Attention: _____
Address: _____

Study of STI Users "Real Needs"

Fresh perspectives help to generate innovative ideas and hopefully more efficient and effective ways to provide scientific and technical information. This seems an opportune time to reassess NASA STI user needs to prepare to integrate new ideas.

The NASA STI user community is being surveyed to see how they actually carry on their jobs, what would make their jobs easier, and future directions of the job. The idea is not only to give the users a chance to tell what they want, but to find out what they need that they may not realize, in order to be responsive and develop a program that will fulfill these needs. Logistics Management Institute (LMI) is conducting a survey to determine user requirements at specified NASA centers. The selected segment of the user population includes center management, STI professionals, and researchers or collectors and analyzers of data. The results

will be used to enhance the STI Program to meet the real needs of those who use it.

LMI has successfully performed similar studies to determine user requirements for other federal agencies. The results were used to design and implement customized user environments, much like the NASA STI intelligent gateway. LMI staffers usually spend several days at a site, "living" with the users in an attempt to understand in depth what really goes on in doing a job. Past experience has taught that it takes a day for the users to relax and be comfortable with a stranger present. LMI observes, asks questions, and collects information, being as unobtrusive as possible.

This approach frequently tells the user a lot about the job that hadn't previously been noted. What the STI user actually needs to do the job—and will need tomorrow—can be projected much more accurately.

Translation Program Expanded

NASA's requirements for a translation program have changed dramatically in the last year, and more changes are seen for the next year.

NASA engineers and scientists have acquired significant numbers of documents and made new contacts in their fields due to the scientific and engineering community all over East Europe and the Soviet Union. In addition, NASA program offices, particularly space station programs and operations, have drastically increased their requests for translations to support all aspects of the space station program, such as the redesign of Space Station Freedom. The STI Division has new sources of foreign documents, primarily from the Soviet Union, and is in the process of acquiring the documents themselves from VINITI, the Soviet National Technical Information Agency directly, through a commercial source, and through a cooperative effort with other federal agencies.

Arrangements have been made with the Foreign Technology Division of Wright Patterson Air Force Base to install its machine translation system, SYSTRAN, on NASA's computers, in order to handle larger volumes of translation, particularly Russian to English, in a much quicker turnaround time.

National Aeronautics and
Space Administration
Code NTT
Washington, DC
20546

Official Business
Penalty for Private Use, \$300

THIRD-CLASS BULK RATE
POSTAGE & FEES PAID
NASA
PERMIT No. G27

1 001 STIBUL 910115S095532A
NASA
SCIEN & TECH INFO FACILITY
ATTN : JUNE SILVESTER
PRODUCT QUALITY
P O BOX 8757 BWI ARPT
BALTIMORE MD 21240



POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

New Space Station Bibliography:

Large Space Structures and Systems in the Space Station Era

A Bibliography with Indexes

This bibliography merges two former bibliographies: *Technology for Large Space Structures* (NASA SP-7046) and *Space Station Systems* (NASA SP-7056). The first issue lists 1372 reports, articles and other documents introduced into the NASA scientific and technical information system between January 1, 1990 and June 30, 1990.

Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design related to system, interactive analysis and design, structural and thermal analysis, and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems.

Mandel Lecture Fund

The Executive Board of the Cleveland Chapter of the Special Librarian Association has agreed to use monies collected in memory of George Mandel for a yearly September George Mandel Lecture. Income from the fund will be used to cover expenses for an outside speaker. The George Mandel Lecture will enrich the programming and bring in speakers who can contribute to the development of Special Librarians in the Cleveland area.

The **STI BULLETIN** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Jackie Streeks at the address below, or telephone (301) 621-0105, or John Wilson, NASA Headquarters, Code NTT, Washington, DC 20546, (703) 271-5625.

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1991



STI BULLETIN

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STI Issues and Opportunities

(Jane Bortnick prepared this paper while on a three-month detail to the National Research Council's (NRC) Commission on Physical Sciences, Mathematics, and Applications (CPSMA). She is the Assistant Chief of the Science Policy Research Division and a Specialist in Information Science and Technology at the Congressional Research Service, Library of Congress.)

CHANGING ENVIRONMENT

One of the most significant trends in STI is the impact that information technology is having on the conduct of science. This was well documented in the 1989 Committee on Science, Engineering, and Public Policy (COSEPUP) study *Information Technology and the Conduct of Research: The User View*. Computerized instruments gather vastly greater amounts of data than previously possible. New approaches to research questions are possible through computerized analyses of massive databases and visualization techniques. Communications networks link scientists to each other, to distributed databases, and to remote instruments and computing resources. All of these capabilities overwhelm traditional data management techniques and create pressures on accepted information practices. For example, the Earth observing system will transmit a terabyte of data a day and the superconducting supercollider will monitor millions of collisions a second.

Many of the significant research challenges today are interdisciplinary in nature. This requires expanding the circle of collaborators, as well as the range of information sources. While this is facilitated by communications networks and large databases, the

different methodologies, vocabularies, and cultures of individual disciplines create obstacles to efficient information exchange. Systems increasingly need to be designed to accommodate users who were not immediately involved in the original research. These "distant" users are important contributors to the research enterprise and need to identify, access, and evaluate needed information resources. Merging existing data collections from different fields to perform analyses creates new problems. It becomes extremely difficult, if not impossible, to compare data that were derived using different techniques or approaches. Increasingly, it is important to have sufficient metadata, or data about data, in order for the distant user to make effective use of the information.

The situation is compounded by the growing internationalization of science. Many of the major research efforts involve worldwide data collection. Therefore, not only are a variety of disciplines involved, but scientists from around the world are participating in these efforts. The users in these projects are distant geographically as well. Communications networks facilitate the exchange of ideas and access to remote databases, but there is still much progress that needs to be made in making systems more transparent and in developing common protocols. Furthermore, the need to have ready access to foreign R&D results continues to grow.

DISCIPLINARY ACTIVITIES

Much work on data management issues occurs within disciplines as scientists ad-

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STI Issues and Opportunities

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dress the particular information concerns within their fields. The NRC has been actively involved in these efforts through various boards, committees, and panels. For example, in the last few years the Committee on Data Management and Computation of the Space Science Board published the report *Selected Issues in Space Science Data Management and Computation*; and the Mapping Science Committee of the Board on Earth Sciences and Resources published *Spatial Data Needs: The Future of the National Mapping Program*. A number of earlier studies on space and earth science data requirements exist as well. The Numerical Data Advisory Board also produced studies looking at data validation needs in the physical and chemical sciences.

In other fields, the Transportation Research Board has addressed a range of data management issues including the recent report, *Data Requirements for Monitoring Truck Safety*. The TRB also produces the database "Transportation Research Information Service" that is available publicly via DIALOG. The Institute of Medicine has looked at medical records management and data requirements for numerous epidemiological studies. The Committee on National Statistics produced the study *Sharing Research Data* in 1985 and the Committee on Science, Engineering, and Public Policy published *Information Technology and the Conduct of Science: The User's View* in 1989. Within the Office of International Affairs, the Board on Science and Technology for International Development (BOSTID) prepared the report, *Science and Technology Information Services and Systems in Africa* and a series of reports on the use of microcomputers in development. The Office of Japan Affairs did several reports that contribute to improved access to the results of Japanese research and development. When these studies are combined with the work done by the Computer Science and Technology Board and the former Board on Telecommunications and Computer Applications dealing with computer and telecommunication technologies it adds up to a substantial investment by the entire Academy complex in analyzing scientific data management.

Perhaps even more interesting, because it reflects the changing research environment are projects currently underway within the National Academy of Sciences (NRC) complex that deal with scientific and technical information. The Board on Mathematical Sciences is developing a study on the statistical methodologies involved in combining statistical data from different sources. The Institute of Medicine has a committee looking at

creating a national neuroscience database, and the Mapping Science Committee is working to demonstrate the benefits of a spatial data infrastructure. The Committee on National Statistics has convened a panel to study issues of confidentiality and data access. COSEPUP's Panel on Ethics is looking at several aspects of data practices, including conducting a computer conference on new technologies that may assist in promoting standards of scientific conduct. The Mathematical Sciences Education Board is developing a mathematics education leadership network. The Computer Science and Telecommunications Board recently released the report *Computers at Risk* addressing computer security concerns, held a workshop on computing and molecular biology, and is exploring the potential for national research collaboratories. The Transportation Research Board is conducting a study on transportation data needs for strategic planning and anticipates a possible future study on the feasibility of a real time database for shipments of hazardous materials. Indeed, current NRC projects reflect the need to develop a new, redefined information infrastructure that can adequately handle the data requirements of the emerging research agenda.

COMMON ISSUES AND GAPS

A number of common issues emerge. Traditional concerns are being redefined. For instance, the need for scientists to take responsibility for sound data practices may require additional skills and procedures in the electronic age. New themes have emerged. These include requirements for "transparent" access to vastly expanded and distributed electronic resources, merging data from numerous sources, greater data validation, closer cooperation between the user community of scientists and the information system designers, long-term viability of electronic data, and expanded resource commitments to support technologically advanced information systems. One particularly pressing problem involves archiving large scientific databases. Questions to be resolved include:

- determine what STI should be retained
- where should datasets reside
- what formats should be used
- how to physically maintain the databases
- how to reduce dependence on specific hardware and software.

Despite common concerns, there is little building upon the work done by one discipline or project by others. This creates duplication of effort as well as gaps in coverage. A key concern is how to integrate diverse databases from different disciplines and make it useful to a broad re-

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STI Issues and Opportunities

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search community. Additional research in very large database design needs to be supported and must reflect user concerns as well as technical considerations. There is concern that the different multidisciplinary databases being built to support key research projects may be incompatible. Much work needs to be done establishing information locator systems, improving user interfaces, developing standards for data exchange, identifying remote user requirements, establishing metadata requirements, and creating data validation procedures for large interdisciplinary databases. Improved techniques for performing analysis of terabytes of data will be required.

Resolution of these problems involves applying technology more effectively, performing new research in certain areas, and achieving agreement on new data management practices. In many cases, it requires input and expertise beyond that of any single discipline and will benefit researchers in many fields.

Where the building of new scientific and technical information infrastructure is involved, the concerns are national in scope and transcend individual disciplines. The National Research and Education Network (NREN) is considered a national undertaking that will foster scientific advancement, support education, and improve U.S. competitiveness; the information resources connected with it should be viewed the same way.

STI IN TRANSITION

In the past, several distinct STI communities existed with relatively little communication among them. Both the global change program and the genome project, for example, involve combining information sources that are numeric, bibliographic, and graphic.

The concept of large, centrally located databases is being replaced by the concept of "virtual databases" that provide transparent connections to distributed resources. Collaborative research over networks involves exchanging, storing, and analyzing common datasets. Email systems, bulletin boards, and electronic publications increasingly contribute to the growth of STI and raise a host of questions about data reliability, ownership, and privacy. The critical connection between telecommunications systems and information resources also has fostered greater interaction between the "technical" network community and information providers and intermediaries. The recently created Coalition for Networked Information in which

the library community and Educom joined forces illustrates this point.

As STI concerns move beyond the parochial interests of particular disciplines, as linkages occur with the networking community, and as the trends toward interdisciplinary research on a global scale become more pervasive, an expanded user community is developing. These users are beginning to voice legitimate concerns about both technical and policy issues associated with STI. Geoscientists, biologists, and engineers have identified common concerns about STI access and in building systems that will accommodate the needs of future government scientific and technical initiatives. The work being done by the different disciplines, ranging from the mathematicians to the neuroscientists, is indicative of the growing number of scientists who share common interests in STI issues.

New Thesaurus Terms

Subject terms recently added to the *NASA Thesaurus* are listed below. These terms are currently available on NASA/RECON. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA Center for Aerospace Information, (301) 621-0103.

FRENCH SPACE PROGRAMS

Transferred to FRENCH SPACE PROGRAM

GADOLINIUM-GALLUM GARNETS

Changed to GADOLINIUM-GALLIUM GARNET

GERMANY

Scope Note Deleted - No Longer Array Term

GRAVITY METERS

Use GROUND WATER

GROUNDWATER

Use GROUND WATER

HYDROSCIENCE

Use HYDROLOGY

IHD (HYDROLOGICAL DECADE)

Use INTERNATIONAL HYDROLOGICAL DECADE

QUESTOL

Transferred to QUESTOL AIRCRAFT

RADIO DETECTING AND RANGING

Use RADAR (Replaces RADIO ASSISTED DETECTING AND RANGING)

"NACA is a Tremendously Important Heritage for the Agency"...

Dr. Robert Rosen
Deputy Associate Administrator
Office of Aeronautics, Exploration, and Technology

The NASA Scientific and Technical Information Program held its third STI Program Coordinating Council Meeting at its Crystal City location on February 4, 1991. The main topic for this meeting was the NACA Documents Database Project. Over 30 individuals, representing the NASA Centers, the STI Program, STI contractors, and consultants were on hand to present briefings and to participate in interactive discussions on this most important project.

Gladys Cotter, STI Program Director, in her opening remarks emphasized the needs expressed by the aerospace research community to have the valuable NACA collection available to them in a much more useable and efficient manner.

To determine the scope of what needs to be done to meet these objectives, the NACA Documents Database Project was recently initiated by the STI Program and was a subject for discussion during this meeting. According to Barbara Everidge, the NACA Project Manager, the purpose of this project is two-fold:

- to develop the definitive bibliography of NACA produced and/or held documents, and
- to make that bibliography and the associated documents available to the aerospace community.

According to Ruth Smith, STI Consultant, the major tasks involved in this project include determining:

- The number of NACA and non-NACA documents.
- The availability of bibliographic records for those documents.

- The location and availability of the documents themselves.
- The level of standardization of cataloging for those documents already cataloged.
- The user requirements for a useful NACA database

including but not limited to data elements, cataloging conversions and/or standards and optimal media for dissemination of bibliographic information.

- The user requirements for a useful NACA archive including but not limited to document availability and document delivery methods and response times.

Other tasks include recommending a methodology for developing and/or upgrading electronic bibliographic records to a level acceptable to the users and a methodology for defining and/or developing the associated NACA archive.

Following the description of the project, several participants presented overview briefings on specific aspects of the NACA collection. Ms. Irene Bogolubsky, American Institute for Aeronautics and Astronautics (AIAA); Ms. Carolyn Floyd, Langley Research Center; and Ms. Mary Walsh, Ames Research Center, discussed the NACA bibliographic records. The availability and preservation of the NACA documents was discussed by Ms. Dian Marincola, NASA Center for Aerospace Information; and the National Archives Records Service (NARS) holdings of NACA documents was discussed by Ms. Kay Voglewede, STI Program. Mr. Tom Lahr, STI Program, discussed the NACA foreign documents and their availability.



NASA Thesaurus Aeronautics Vocabulary Published

The second in a series of "NASA Minithesauri," the aeronautics spinoff of the *NASA Thesaurus* was published in January 1991. The computerized production techniques have been refined since the publication of the first of the series, *NASA Thesaurus Astronomy Vocabulary* was published in July 1988. (See *STI Bulletin*, September 1988, p. 4). This 222 page thesaurus is especially useful to those collections primarily limited to aeronautics. Supporting terminology from areas such as fluid dynamics, propulsion engineering and test facilities complement the basic core of aeronautics terms. The *Aeronautics Vocabulary* which contains over 4700 main terms

contains complete hierarchies for these terms. As in the *Astronomy Vocabulary*, certain terms are included in the hierarchies that are tangential to the subject. Hierarchical information for such terms may be found in the main *NASA Thesaurus* and its cumulative supplements. The convenient size of the *NASA Thesaurus Aeronautics Vocabulary* makes for greater browsability than its more comprehensive source. (Available: NTIS or NASA Center for Aerospace Information, Hardcopy/Microfiche refer to N91-16847, price code A10, \$31.00.)

Soviet STI—VINITI

Sources of STI in the USSR are increasingly open. A major source is VINITI—The Soviet Institute of Scientific and Technical Information.

Professor P.Y. Nesterov, General Director, VINITI, of the USSR Academy of Sciences, met with CENDI at the November 14, 1990 meeting. His remarks are summarized below.

The Soviet Union has an extremely centralized system. It is a state information system and rather large. There are 228 information organizations included in this state system, all established under the State Committee of Science and Technology. In 1953, the Academy of Sciences of the Soviet Union created VINITI. This institute has two goals: investigate information policy in the Soviet Union; and create an information system in the field of science and technology.

In the Soviet Union, there are three levels of information activity:

- *Twelve information centers.* All are Soviet Union institutions. VINITI is one. They are connected with the flow of documents in the world, inside and outside the country. One institution deals with standards. One deals with reports like NTIS.
- *Branch information centers.* There are 90 branches. These represent technical areas or branches of science. This will change rapidly. They extract part of the information from top level agencies and add more detailed information from industry and other countries.
- *Regional information centers.* These are specialized. There are 15 republics but only 14 republic centers; the Russian Republic has 69 information centers, and the Ukrainian Republic has 17. There are a total of 112 regional information centers in all. From the higher two levels, they collect information which may be needed by enterprises in their area. There is a close connection with all enterprises in the area. They collect all information from the enterprises if it is of significance and feed this back up into the higher level units.

The system is working, and in principle is OK. But, information work in the Soviet Union is regarded as a secondary level activity along with culture, education and medical care after defense and industrial production. People in the information sphere receive less pay than those in industry and therefore have less incentive.

One may eventually see growth in private information systems. We may see the creation of a lot of small information activities, such as joint ventures. The state information system is trying to find new ways to improve. To do this it is necessary to cooperate across the system and, not be limited by boundaries between information centers. They also need to work on the needs of users.

The state information system needs to be changed. The introduction of competition, an information market, will produce important results. One change already effected was the establishment of an all union information association (SOYUZINFORM) in December 1989. Under this umbrella, organizations and people can earn additional money for additional work effort. Creating new information for users is not under state control. There is a Council in the association which elects the president and the vice presidents for the association. A Director General is hired and paid by the association. As president of SOY- UZINFORM, Prof. Nesterov invited cooperation with CENDI.

Professor R. Seiful-Mulukov, Director for International Relations, VINITI, continued the presentation with emphasis on VINITI. His remarks are summarized below.

VINITI has two umbrellas: the Academy of Sciences, which established VINITI in 1963; and the State Committee for S&T. It has three main activities, within the framework of both: world input flow, generation of abstracts, and scientific investigation of information science.

- *Input flow.* VINITI receives documents from 100 countries. Of these, 45% are in English and 31.7% in Russian. It receives all Soviet literature and this has increased 100% since its establishment. Of the Soviet input, 64.2% are periodical articles, 18.3% conference proceedings, 11.5% patents, 2% books, and 2% manuscripts.
- *Abstracts.* Twenty-nine subjects are covered in VINITI's monthly/bimonthly abstract journal. In 1990, 1.4 million publications covered geology, biology, physics, chemistry, metallurgy, etc. There are 227 separate series and 227 corresponding databases. The State subject heading list is hierarchical, with eight levels of classification. They also use UDC classification.
- *Analysis of information.* VINITI publishes 150 volumes of analytical reviews in various subjects, annually. Leading academicians are provided the list and they prepare the reviews. Special series are for the attention of high officials in government who make recommendations on science and technology development.

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SOVIET STI—VINITI*(continued from page 5)*

VINITI has a full-time staff of 4000, of which 800 people prepare the abstract journals. In addition, there are 20,000 part-time staff, including scientists and engineers. VINITI's own publishing enterprise operates with 1120 employees.

A main VINITI function is to inform Soviet information scientists about world (including Soviet) technical and scientific achievements. Major interests are computing/linguistic problems, classification theory, retrieval languages, expert systems, theory and philosophy of information systems and services within the state system.

VINITI information resources include:

- *Databases* with eleven million records. Energy alone includes 400,000 items.
- *Other resources in the State System including:*
 - 1980 - 800,000 books
 - 1984 - 700,000 reports on R&D
 - 1983 - 172,000 dissertations
 - 1980 - 90,000 unpublished software packages
 - 7,600,000 patent analogs

VINITI gets a copy of each publication produced in the Soviet Union. This has been free, until now. The Standards Institute accounts for 450,000 standards. The All Union Translation Center accounted for 112,000 translations (1986). State STI Libraries contributed 22,000 serial titles from Eastern European Countries (1972) and 30,000 published software packages (1984). Each creates its own database and these are now available. A printed catalog of databases is maintained.

Automation and Control Information System has 400,000 items. ATOMINFORM inputs 10,000 documents annually in the INIS system on nuclear energy. There is an Electrical Technical Information System and a Photographic Database. VINITI has 3 numeric databases:

- chemical compounds (500,000 per year added)
- genome (240,000 nucleotide sequences)
- chemistry of organic compounds on fluorocarbon

The oil industry has three databases. There also is a medical database. No military is entered into VINITI. There is a separate institute for that. VINITI has unclassified information only.

The basis for cooperation between VINITI and major U.S. Federal STI activities is considerable.

Citation Analysis of NASA Papers

The Institute for Scientific Information (ISI) analyzed the impact of journal articles published by NASA scientists and engineers, using a citation indexing methodology. All articles published from a NASA site that were cited at least once by another author from the period 1973-1988 were included in the study. The findings were published in the October 1990 issue of ISI's journal *Science Watch*.

NASA scientific papers had their maximum recognition by other scientists in the late 1970s. During the 1980s, there was a short-lived recovery. NASA journal articles on the Voyager mission produced more of NASA's highly recognized papers than any other mission, with the Ultraviolet Explorer running second. The Jet Propulsion Laboratory (JPL) remains the consistent "star performer," with Langley Research Center and Marshall Space Flight Center gaining strength in the most recent period.

During the 1973-1988 period, NASA authors published some 17,400 papers; Goddard Space Flight Center, JPL and Ames Research Center accounted for 28.9, 22.6 and 17.9 percent of the total, respectively. The study shows that "after rising in 1977, 1978 and finally achieving a peak in 1979, the citation impact of NASA's papers fell in 1980 and 1981. Following a weak recovery, NASA's citation impact fell further—ending in 1984-1988 at the lowest level of the entire 16 year period." Individual 5-year time frame series are also shown for each cite.

Various explanations have been offered by NASA officials and other commentators. Generally, they all recognize the lessening of launch opportunities after the 1970s. With the resumption of activities, there is reasonable expectation of new recognition of NASA's contribution to knowledge by the scientific universe.

(This summary was prepared from "NASA's Citation Impact Dims in 1980s, But Voyager Missions and JPL Shine" in the October 1990 issue of Science Watch, published by ISI, Philadelphia. The ISI study considered only journal articles; it did not include citations of NASA technical reports, a large and important fraction of NASA scientific and engineering output. Any conclusions about trends in NASA research performance based solely on journal articles have not considered the impact of this important — but difficult to measure — part of NASA STI output.)

NASA/RECON Training Schedule 1991

Following is the NASA/RECON training schedule for 1991, through August. All classes currently scheduled will be held at the NASA Center for Aerospace Information near Baltimore, Maryland. Prices listed are for non-NASA personnel.

Basic RECON

Tuesday, April 23
Thursday, June 6
Tuesday, August 20

Basic RECON training is one day, at \$100.00 per person. Class size is limited to 12.

This session is designed for the beginning NASA/RECON searcher, preferably with some online experience. The content of the STI Database, as well as its file and record structures, are covered in detail, along with basic RECON commands. Search strategy formulation, Boolean logic, and query analysis are emphasized as they pertain to the NASA/RECON system. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

NASA/RECON Training Registration

Pre-registration is required for all training sessions. To register, call RECON/Reference Services at (301) 621-0150 between 8 a.m. and 4:30 p.m., e.t., Monday through Friday. If a preferred session is closed, ask to be wait-listed. Each registrant will receive an individual confirmation letter.

Reservations may be cancelled or changed up to five (5) business days before the session. Cancellations after that date, and no-shows, will be billed for the full amount. Users are entitled to one free training class per new user ID.

You may be billed to a standing RECON purchase order, to a new purchase order, or you may pay with a company or personal check. Make checks payable to RMS Associates.

Advanced RECON

Wednesday, April 24
Wednesday, August 21

Advanced RECON training is one day, at \$160.00 per person. Class size is limited to 6.

The Advanced training session is designed for the experienced RECON searcher. Basic text searching is reviewed, as well as indepth text searching techniques. Advanced RECON system features and stored search formulation and editing are covered. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

Information Resources Management Review

The first issue of the *Information Resources Management (IRM) Review*, dated December 20, 1990, covers the proceedings of the NASA Information Systems Advisory Council (NISAC) meeting held December 4-6 at Marshall Space Flight Center (MSFC).

The NISAC supersedes the Intercenter Committee on ADP, which was established by NASA in 1963, and its revised orientation reflects the broader perspective necessitated by technological change and NASA's mission needs. Chaired by MSFC's John Lynn, the NISAC meets twice annually to review information resources management issues and concerns across NASA, to share information about program and center initiatives, and to formulate specific action plans to address the needs identified.

The NISAC meeting was attended by over 50 professionals, who represented the institutional program offices and their centers, telecommunications (Code O), procurement (Code H and centers), and legal offices (Code G). Most of the meeting focused on better management of the technology and coping with regulatory matters.

Requests for copies of the first issue of the IRM Review, or to be put on the distribution list should be forwarded to:

Office of Information Resources
Code NT
National Aeronautics and Space Administration
Washington, DC 20546
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International STI Activities

- In cooperation with the NASA International Relations Division and the Australian Embassy's Defence Science Counsellor, implementation of an STI exchange agreement has been agreed upon.
- An STI exchange agreement with Canada is being implemented. Effective feedback communications have been established between the NASA Center for Aerospace Information and the Canadian processing contractor, Micromedia, Ltd., in Toronto.
- The STI Program held two meetings with European Space Agency (ESA) representatives, one in Crystal City, VA, the other in Frascati, Italy. The purpose of the meetings was to get acquainted, review status of past decisions, and to map out the course of future cooperation.
- Twelve additional European organizations were approved for participation in the NASA/ESA Tripartite Exchange Program, bringing the total to 504.
- The Hungarian Academy of Sciences has undertaken to define an initial level of participation. This could result, as in the other national-level agreements, in a central-governmental organization taking full responsibility for the collection and processing of relevant technical report materials for the NASA STI Database.
- In exchange with the Israel Space Agency, 13 Israeli organizations are contributing input.
- Representatives of the National Space Development Agency of Japan (NASDA) met with the NASA STI Program to discuss issues relating to a "Technical Protocol" for the exchange of STI between NASA and NASDA.
- A copyright license agreement was concluded with Her Britannic Majesty's Stationery Office on October 3, 1990.
- The total number of foreign citations added to the NASA STI Database during 1990 were:

IAA	=	22,215
STAR	=	6,046
TOTAL	=	28,261

The **STI BULLETIN** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Kate Kase at the address below, telephone (301) 621-0140, or to John Wilson, NASA Headquarters, Code NTT, Washington, DC 20546, (703) 271-5625.

RECON operational problems may be directed to the RECON Coordinator at:

NASA Center for AeroSpace Information
P.O. Box 8757
BWI Airport, MD 21240
(301) 621-0300

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National Aeronautics and Space Administration
Center for AeroSpace Information

Post Office Box 8757, Baltimore/Washington International Airport, Maryland 21240
(301) 859-5300 FAX (301) 621-0134

September, 1991

SPECIAL NOTICE TO NASA STI PROGRAM USERS

Starting October 1, 1991, the NASA STI Program will impose an increased charge for all products and services provided through the NASA Center for AeroSpace Information (CASI). The new fees are based upon a recommendation from the Office of the Inspector General that the STI Program increase its fee collection for products and services supplied to the NASA community. In addition to the IG's recommendation, NASA Deputy Administrator, James R. Thompson, Jr. advised STI Managers to increase their revenues and strengthen their fee collection policies in light of Agency budget constraints. All NASA publications which are currently provided gratis will now be included in the new fees charged, except the STI Bulletin. Each Program Office will receive one gratis copy of The NASA Scientific and Technical Aerospace Reports (STAR). Additional copies of STAR will be offered according to the GPO price schedule. CASI will charge NTIS prices for both original and reproduced copy, and microfiche document orders, and the NASA Thesaurus. We regret the inconvenience this may cause, however, the spiraling cost of information dissemination makes this policy a necessity.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, DC 20546

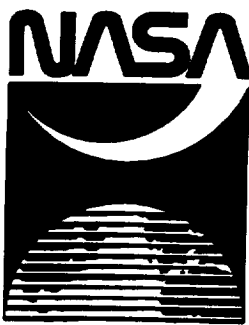
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**STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION**

STI BULLETIN

Volume 21, Number 2

Summer 1991

NASA International STI Exchange Project

In its founding legislation, the National Aeronautics and Space Act of 1958 directed the agency to conduct its activities "so as to continue to contribute materially to ... cooperation by the United States with other nations and groups of nations in work pursuant to this Act and in the peaceful application of the results thereof." Further, recognizing the importance of documenting the results of R&D investment and value of information transfer, the Act specifically require NASA to "provide the widest practicable and appropriate dissemination of information concerning its activities and the results thereof." (P.L. 85-568)

These statements were the basis for the creation of the NASA STI Program more than 30 years ago and laid the groundwork for the collection of international information for the creation of a database of world-wide aerospace information.

Thomas Lahr, of the NASA Headquarters STI Program has been looking back over those 30 years, in order to try to shape international STI activities for the next five to ten years, relating them to the STI Program Strategic Plan. He would like your help.

Background

NASA, the European Space Agency, and individual institutions around the globe have had international cooperative relationships for over 30 years. In 1959, formal international cooperation began with bilateral document exchange agreements between foreign institutions and the NASA STI Program. In the 1960s and 1970s the European Space Agency (ESA) developed into an umbrella relationship covering the 14 major western European countries.

Through tripartite agreements between NASA, ESA, and European aerospace organizations, ESA acts as the consolidator and pre-processor of European input to the NASA STI Database and as the distributor of NASA information back to these organizations.

The ESA model of a central organization taking responsibility for input to the NASA database has led to a national level approach to exchange agreements. The approach is to sign "Technical Protocols" at the national level between NASA and the foreign governmental organization with aerospace responsibility within the other country. The counterpart organization acts as the coordinator of the exchange for aerospace information between NASA and organizations in that country. To date, national level agreements exist with Canada, Israel, and Australia. Negotiations are in process with Japan and preliminary discussions have been held with Hungary.

International STI Program Review

In 1990, the NASA Scientific and Technical Information Program undertook major planning and evaluation. The International STI Program was highlighted for review. Recent changes in the international environment, including technology, sociology of science, economics, and politics have led NASA to conclude that it is time to assess where the international exchange of information is today and what new opportunities exist for a more comprehensive international aerospace information system. The NASA/ESA Tripartite Exchange Program was an initial focus since: 1) it is a very active part of the program; 2) concerns have been expressed by some of the participants; 3) other aerospace databases are being developed abroad; 4) changing technol-

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STI Program Exhibits Products and Services

The STI Program has initiated an active schedule for exhibiting at conferences and workshops throughout 1991. So far this year, program products and services were featured at four conferences.

In February, STI Program staff introduced the STI and other NASA programs at the 1991 American Association for the Advancement of Science (AAAS) Conference. This year's conference boasted attendance by 4,690 registrants and 237 exhibitors. Traffic was high at the NASA STI Program booth, with samples of several products given out, much information about the program imparted, and many requests for registration information sought. The conference was held at the Sheraton Washington in Washington, DC.

In March, STI Program staff spotlighted STI products and services at the annual Aerospace/Defense Day meeting of the Southern California Online Users Group (SCOUG). This organization is the largest of its kind in the United States, and includes a large number of aerospace and defense-related organizations among its membership. The meeting was held at the headquarters of Hughes Aircraft in Los Angeles.

Two conferences were attended in July: The Geographic Information and Spatial Data Exhibition (GISDEX) on July 9-12 in Washington, DC, and the Summer Computer Simulation Conference on July 22-24 in Baltimore, Maryland. The GISDEX conference exhibits attracted more than 5000 visitors, including managers, engineers, and scientists, and featured a VIP tour on the first day of the exhibit, with representatives from NASA, EPA, and other Federal agencies. The Computer Simulation Conference, sponsored by the Society for Computer Simulation International, spotlighted hardware and software vendors, and various information organizations, with a keynote address by the Hon. Charles M. Hertzfield, Director of Defense Research and Engineering on the need for improved simulation utilities.

Upcoming conferences where the STI Program will be exhibited include the Society for Automotive Engineers - Aerotech '91, September 22-26 in Long Beach, California; and Space Summit 1991: An International Outlook on Space Programs, October 30-31, Huntsville, Alabama. Enter HELP EXHIBITS online in RECON for the full 1991 schedule.

(continued on page 7)

Foreign Literature Services Program

The Scientific and Technical Information Program is expanding the services available to NASA Headquarters, Centers and Contractors for translations under the Foreign Literature Services (FLS) program. FLS is one component of the STI Program to collect, process, and disseminate STI from around the world to support the activities of the NASA community.

If you are a research manager, aerospace engineer, or scientist, foreign language documents may contain necessary information or data for your project. The language barrier, however, makes them inaccessible to you without a translation. The STI Program's Foreign Literature Services may be able to save you and your organization time and/or resources by locating an English-language version of a foreign document or by translating it immediately at your request. Translation services now are available for 35 languages and 3 delivery types. Requesters can choose rush, standard or economy delivery with corresponding due dates and costs for each type. Requesters also can arrange to pay for their translations through a deposit account.

If your organization is interested in purchasing foreign literature products or services, contact our Foreign Literature Services personnel at (703) 271-5702/5604 between 8:00 a.m. and 4:30 p.m., e.s.t., and inquire about arrangements for a deposit account with the STI Program. ♦

New Publication

Engines and Innovation: Lewis Laboratory and American Propulsion Technology (NASA SP-4306)

Recently published by the Scientific and Technical Information Program and the NASA History Office, this publication is an institutional history of the NASA Lewis Research Center from 1940 through the 1980s. The history of the laboratory is discussed in relation to the development of American propulsion technology.

This 276-page paperbound book includes appendixes, an index, organization charts and black and white photographs.

(Avail: GPO for \$16.00;

GPO Stock No. 033-000-01095-8)

The NASA STI Database

Listed below are the cumulative number of accessions in the NASA STI Database for the years specified.

YEAR	Cumulative Accessions
1991	3,195,458 (estimated)
1990	3,115,458
1982	2,202,248
1977	1,651,870
1972	926,475
1967	444,066
1962	11,386

NASA INTERNATIONAL STI EXCHANGE PROJECT*(continued from page 1)*

ogy and marketplace has impacted the basis of exchange; 5) expectations have changed.

In reviewing and planning for the future of the International STI Program, there are many areas to be considered.

- 1) Define NASA's exchange goals, i.e., increase the comprehensiveness of access to foreign material, improve quality of the database, and be responsive to changing international conditions.
- 2) Determine exactly what we want to exchange. This includes traditional items such as documents, microfiche, bibliographic records, search time, database access rights, and non-traditional exchange of STI including software, electronic documents, research in progress, numeric databases, and translation services.
- 3) Determine who has responsibility for what in a cooperative exchange program. Included in this are: acquisition of both report and open literature; cataloging, abstracting and indexing; standards development; merging of national literatures; database merging; quality control; policy development; training and marketing; derivative product creation; and organizational sponsorship.
- 4) Determine who maintains control over what. Who makes policy decisions, owns or holds rights to the data, authorizes access, decides on standards, signs contracts or makes financial decisions?
- 5) Consider the economics involved. There are various costs involved in acquiring and processing information, maintenance of computers, production of abstract journals,

maintenance of standards, etc. There are also revenues involved, such as on-line fees and product sales.

The review of the NASA International STI Program, with emphasis being placed on the considerations above, is being conducted by Thomas Lahr, Code NTT, who is coordinator for the International STI Program. Assistance is being provided by Bonnie Carroll of Information International, Oak Ridge, Tennessee, and Janice Freeman from Information International in Washington, DC. So far, discussions have been held with ESA and some of the key tripartite countries and analysis has been made of the considerations and options. A questionnaire has been developed to solicit NASA/ESA tripartite participant input. The questionnaire was sent out in July 1991. The results of the questionnaire will be utilized to gain information about strengths, weaknesses, costs, and benefits of current exchange relationships, and to identify new opportunities for cooperation.

User Requirements

User input is very important in our review of the International STI Program. We are interested in all aspects of our user requirements. These include subject scope and coverage, country coverage, timeliness, and type of literature among others. If you have thoughts or opinions on the quality of the current access, barriers to the use of foreign STI, and any ideas on improving the existing program, please call or write to Tom Lahr at:

NASA Headquarters
International STI Program, Code NTT
Washington, DC 20546
(703) 271-5646
Fax: (703) 271-5665

MOVING?

The NASA Center for AeroSpace Information (CASI) maintains the mailing lists and address file for most of the NASA network. In order to maintain accurate and up-to-date addresses and contact points for each user registered with CASI, please provide any recent or forthcoming changes below and return to:

NASA Center for AeroSpace Information
ATTN: Registration Activity
P.O. Box 8757
BWI Airport, MD 21240

CASI ID No.: _____ Phone: _____
Organization: _____
ATTN: _____
Address: _____

NASA / RECON Training Schedule

Three Basic RECON Training sessions and two Advanced RECON Training sessions are planned through the end of 1991. The scheduled dates are:

BASIC TRAINING

Tuesday, August 20
Thursday, October 3
Tuesday, November 19

ADVANCED TRAINING

Wednesday, August 21
Wednesday, November 20

Pre-registration is required for all training sessions and can be made by calling (301) 621-0150 between 8:00 a.m. and 4:30 p.m., e.s.t., Monday through Friday. Additional details are available on RECON by selecting 'Training' from the RECON Help News. ♦

STI for Decision Making — A New View

Conventional wisdom urges that management decisions—scientific, engineering, etc.—are based on data, information, STI. But how is it used? What decisions are actually made? What is the decision making process? These could and should influence how we structure STI, such as full text for retrieval, or how information resources are managed.

The following provides an overview of both new and established views and the use, non-use, and misuse of information, on decision making and consequent insight into possible STI development to better serve these needs.

Reprinted by permission of Harvard Business Review. An excerpt from Humble Decision Making by Amitai Etzioni, July-August 1989. Copyright ©1989 by the President and Fellows of Harvard College; all rights reserved.

Not only is the world growing more complex and uncertain at an ever faster pace, but the old decision-making models are failing. The flow of information has swollen to such a flood that managers are in danger of drowning; extracting relevant data for the torrent is increasingly a daunting task. Yet from this swelling confusion, a new decision-making model is evolving. This new approach understands that executives must often proceed with only partial information, which they have had no time to fully process or analyze.

The Bygone Rational Model

Rationalists argue that decision makers should and could explore every route that might lead to their goal, collect information about the costs and utility of each, systematically compare these various alternatives, and choose the most effective course. Today, explosive innovation in fields like communications, biotechnology, and superconductivity can take companies by surprise.

Rationalist decision makers simply need to know much more than ever before. With computers, our capacity to collect and to semi-process information has grown, but information is not the same as knowledge. The production of knowledge is analogous to the manufacture of any other product. We begin with the raw material of facts. We pretreat these by means of classification, tabulation, summary, and so on, and then proceed to the assembly of correlations and comparisons. But the final product, conclusions, does not simply roll off the production line. Indeed, without powerful overarching explanatory schemes or theories, whatever knowledge there is in the mountain of data we daily amass is often invisible. Artificial intelligence may someday make the mass production of knowledge an easy matter, but certainly not before the year 2000.

Actually, decision making was never quite as easy as rationalists would have us think. Psychologists argue compellingly that even before our present troubles began, human minds could not handle the complexities that important decisions entailed. At best, we can focus on eight facts at a time. Our ability to calculate probabilities, especially to combine two or more probabilities—essential for most decision making—is low.

Implicit in the rationalistic decision model is the assumption that decision makers have unqualified power and wisdom. Successful decision-making strategies must necessarily include a place for cooperation, coalition building, and the whole panorama of differing personalities, perspectives, responsibilities, and powers.

Counsels of Despair

So even before the world turned ultracomplex and super-fungible, our intellectual limitations were such that wholly rational decisions are usually beyond our grasp, so students of decision making have come up with two new approaches. Incrementalism advocates moving away from trouble, trying this or that small maneuver without any grand plan or sense of ultimate purpose. It eliminates the need for complete, encyclopedic information by focusing on limited areas, those nearest to hand, one at a time. It avoids the danger of grand policy decisions by not making any. Grand new departures, radical changes in course, do not occur, however much they may be needed.

A second counsel of despair is openly opposed to reflection and analysis. It calls on executives to steam full speed ahead and remake the world rather than seek to understand it. Building on the observation that many things are exceedingly difficult to predict—which product will sell, what the result of an advertising campaign will be, how long R&D will take—executives are advised not to sit back and await sufficient information but to pick the course favored by their experience, inner voice, intuition, and whatever information is readily available—and then to commit. It does despair of knowing the world and approaching it sensibly.

Yet another approach is rational ritualism, where executives and their staffs take part in an information dance whose moves include the data pas de deux and the interpretation waltz. The information used is generally poor (arbitrarily selected or from undependable sources) and often overinterpreted. Usually most of those involved (or all of them) know the data are unreliable and the analysis unreal but dare not to say that the emperor is naked. Instead, they make ritualistic projections—and know enough to ignore them.

(continued on next page)

STI FOR DECISION MAKING (continued from page 4)**The 'Mixed Scanning' Alternative**

Because this approach is well suited to the new age of data overload and pell-mell change, it deserves a new look, and though still evolving, the respectability that a clear formulation can give it. Call it humble decision making, but a more descriptive title might be adaptive decision making or mixed scanning. It entails a mixture of shallow and deep examination of data-generalized considered of a broad range of facts and choices followed by detailed examination of a focused subset of facts and choices. Mixed scanning involves two sets of judgments: first are broad, fundamental choices about basic policy and direction; second are incremental decisions that prepare the way for new, basic judgment and that implement and particularize them once they have been made.

Important Adaptive Techniques

Focused trial and error is probably the most widely used procedure for adapting to partial knowledge. It has two parts: knowing where to start the search for an effective intervention, and checking outcomes at intervals to adjust and modify the intervention. Focused trial and error assumes there is important information that the executive does not have and must proceed without. It is not a question of understanding the world "correctly," of choosing a logical procedure on the basis of facts, but of feeling one's way to an effective course of action despite the lack of essential chunks of data.

Tentativeness—a commitment to revise one's course as necessary—is an essential adaptive rule. By viewing each intervention as tentative or experimental, they declare that they fully expect to revise it. Procrastination is another adaptive rule that follows from an understanding of the limits of executive knowledge. Delay permits the collection of fresh evidence, the processing of additional data, the presentation of new options. It can also give the problem a chance to recede untreated. Decision staggering is one common form of delay. Fractionalizing is a second corollary to procrastination. Instead of spreading a single intervention over time, it treats important judgments as a series of subdecisions and may or may not also stagger them in time. Hedging bets is another good adaptive rule. Maintaining strategic reserves is another form of hedging bets. Reversible decisions, finally, are a way of avoiding overcommitment when only partial information is available.

The list of adaptive techniques illustrates several essential qualities of effective decision making that the textbook models miss: flexibility, caution, and the capacity to proceed with partial knowledge. Only fools make rigid decisions and decisions with no sense of overarching purpose, while the most able executives already practice humble decision making. They will apply the good sense and versatility of this tested, realistic model more widely as the world grows more and more difficult to manage. ♦

Huntsville Hosts NASA STI Conference '91

Marshall Space Flight Center hosted the NASA STI Conference and Workshops '91 on April 9-11. The theme of the conference was "Shaping the Future: NASA STI in the 1990s." The conference was organized to focus on three broad concepts with a day of sessions devoted to each. On Tuesday, April 9, the sessions were concentrated around the notion of STI Purpose, Product and Customers. Wednesday, April 10 sessions centered on Current STI Developments, Issues, and Technology Trends. And the Thursday, April 11 focus was the Strategy and Plan for the 1990s.

STI Purpose, Product, and Customers sessions included an overview of STI Program Objectives, an update on the International Exchange Project, and a panel discussion with end users from various disciplines as well as information intermediaries. Representatives from several NASA Center

'Shaping the Future: NASA STI in the 1990s'

Libraries, academia, and NASA R&D programs conducted the sessions. Sessions on day two on Current STI Developments, Issues, and Technology Trends imparted a great deal of information on the progress of projects and operations including the NASA Access Mechanism (NAM), Program Support Communications Network (PSCN), and NASA printing activities and interaction with the Joint Committee on Printing (JCP). The Strategy and Plan for the 1990s, discussed on day three, featured an overview of the coordination efforts underway between STI Program personnel at Headquarters and the Centers with other NASA program offices. And an opportunity to compare the NASA STI Program with that of DOE was provided through a discussion by Mark Fornwall of DOE/OSTI.

In addition, the first two days offered concurrently run workshops in three areas: Library, Technical Publications, and Graphics, with day two adding a fourth on Automated Information Management. Summaries for these workshops were presented on day three.

Among the highlights of the conference was the keynote address delivered by Deputy Administrator J. R. Thompson, who reinforced the role of STI in the R&D process and emphasized the possibility for partnerships between the STI Program and R&D programs as well as private industry.

Thanks to Annette Tingle/MSFC Library and her staff who spent long hours organizing and executing this excellent conference. ♦

NASA STI Council Established

A group of top-level NASA managers are working with Dr. C. Howard Robins, Jr., NASA Associate Administrator for Management, to advise on issues and policies and provide oversight for the NASA Scientific and Technical Information (STI) Program.

Serving on the NASA STI Council are:

1. Dr. Leonard Harris, Chairman,
Headquarters/Code R
2. Wallace Keene, Executive Secretary,
Headquarters/Code NT
3. Joseph Alexander,
Headquarters/Code S
4. Dr. Robert Brown,
Headquarters/Code XE
5. Dennis Bushnell,
Langley Research Center
6. Dr. James Green,
Goddard Space Flight Center
7. Robert F. Kempf,
Headquarters/Code GP
8. Frank Peneranda,
Headquarters, Code CU
9. Dr. William Raney,
Headquarters/Code M-8

The Council is a NASA Internal Committee and will provide impartial advice and counsel to the Associate Administrator for Management to ensure that:

- A coherent NASA-wide vision to meet the purposes of the Program and a commitment to managing the agency's STI as high-value corporate resource is established.
- An STI management plan and architecture designed are designed to support this vision and satisfy user needs.
- STI foreign exchange and acquisition policies are in the best interest of the U.S. aerospace community.
- Information technology is applied, and new technologies are developed, for accessing and assimilating NASA STI into the research environment in the most effective manner.

Each Council member will advocate and coordinate implementation of STI Program objectives, decisions, and procedures within that member's respective organization.

Is the STI Program providing scientists and engineers access to the literature base and translation capability they need? Other important issues of concern related to management of

the STI Program include processes for collection and dissemination of STI to NASA scientists and engineers, restructuring of domestic and foreign STI services, emerging legal implications associated with the development of intellectual property, etc. The oversight and advice of the Council will be critically important in addressing these issues and in our efforts to gain NASA a leadership role in the management of scientific and technical information. ♦

New Thesaurus Terms

Subject terms recently added to the *NASA Thesaurus* are listed below. These terms are currently available on NASA/RECON. User suggestions for new terms are encouraged. Contact Ron Buchan at the NASA Center for Aerospace Information, (301) 621-0103.

CARDIAC OUTPUT

DISABILITIES

DOWNBURSTS

F-177A AIRCRAFT

HANDICAPS

Transfered to DISABILITIES

HANDICAPS

Use DISABILITIES

HIGH TEMPERATURE FATIGUE

Use THERMAL FATIGUE

INVERSE KINEMATICS

LOCAL THERMODYNAMIC EQUILIBRIUM

LTE (ASTRONOMY)

Use LOCAL THERMODYNAMIC EQUILIBRIUM

LUNAR BASED EQUIPMENT

LUNAR CONSTRUCTION EQUIPMENT

LUNAR MINING

MULTITASKING (COMPUTERS)

ROBOT CONTROL

SHELL GALAXIES

STROKE VOLUME

TACTILE SENSORS (ROBOTICS)

TASK PLANNING (ROBOTICS)

TELEROBOTICS

TORQUE SENSORS (ROBOTICS)

TRAJECTORY PLANNING

Book Review

Kitty Hawk to NASA, a guide to U.S. air and space museums and exhibits. By Michael Morlan. Bon A Tirer Publications, P.O. Box 3480, Shawnee, KS 66203; 1991. 304p. \$15.95 ISBN 1-878446-04-5.

From the hallowed ground of North Carolina to the frontier of Alaska, the author describes 135 museums, military and civilian, which are dedicated to the restoration, preservation, and exhibit of air and space artifacts. The guide is arranged alphabetically by states with 41 states and Wash., DC represented. Each museum is described in a format consisting of an introduction, directions to the museum, admission cost, hours of operation, and an inventory of the items on display. Many of the museums are located at military installations and each NASA center sponsors a collection of artifacts depicting significant accomplishments. The book concludes with information on air shows, an aircraft locator, and a bibliography. Aviation buffs with interest in a specific aircraft will be pleased at how quickly they can learn how many still exist and where they are located. The liberal supply of black and white photographs with informative captions will stimulate the interest of newcomers to aviation history and will evoke feelings of nostalgia in the oldtimers. Using the directions presented in this guide, interesting side-trips can be taken during summer vacation travels.

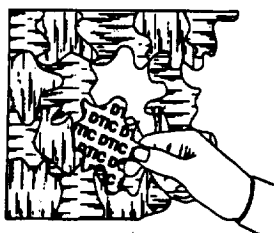
Philip N. French

NASA Center for AeroSpace Information

STI Program Advised to Recoup Costs in FY92 — Price Increases Anticipated

Taking the advice of the NASA Deputy Administrator and the Office of the Inspector General, the STI Program is evaluating its pricing structure for all products and services. In his keynote address at the annual STI Conference, NASA Deputy Administrator, James R. Thompson, Jr., advised the audience of STI Managers to increase their revenues and to strengthen their fee collection policies. Mr. Thompson warned that R&PM funding was likely to be tight in FY92 and that it was critical to recover all costs associated with NASA scientific and technical information programs. Also, a recent review by the Office of the Inspector General (IG) of the Center for AeroSpace Information, a service of the STI Program, recommended that the Program increase its revenue collection practices. In its report, the IG stated that prices were not consistent with overall costs for supplying STI products and services. The STI Program will publish additional information on the new pricing schedules as soon as it becomes available.

Let the Defense Technical Information Center (DTIC) Solve Your Defense Information Puzzle



Join us at the

DTIC '91 Annual Users Training Conference.

DTIC's goal for you is to meet the challenges of managing Defense Information, plus find new ways to make the most of DTIC's products and services.

November 4-8, 1991

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901 North Fairfax Street
Alexandria, Virginia

For more information,
contact Ms. Kay Grigsby at (703) 274-3848
or DSN 284-3848.

STI PROGRAM EXHIBITS... (continued from page 2)

The primary goal of the exhibits is to promote the STI Program through increased visibility and expansion of the potential user base for products and services. Audiences targeted for the exhibits at this time include both policy makers, to increase their awareness of the program, its objectives and purpose, and end users, to introduce and promote new STI products and services targeted to their information needs.

Center STI Program personnel are asked to become involved in this initiative by volunteering to staff booths at conferences local to them. At these, they may provide information to conference attendees on products and services of the STI Program, and on their own local products and services as well if they so choose. The July conferences in Washington/Baltimore area were staffed by NASA employees from Headquarters Code NTT, Center for AeroSpace Information, Goddard Space Flight Center Technical Library, and the NASA Headquarters Scientific and Technical Library, all affiliated with the STI Program. This cooperative effort is expected to be mutually beneficial for all facets of the STI Program both at Headquarters and the Centers. ♦

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Postal Manual) Do Not Return

Thom Pinelli Receives 1991 Award Named for George Mandel

Thom Pinelli received this year's George Mandel Memorial Award, at the annual conference of the Special Libraries Association (SLA), held in San Antonio, Texas, June 8-13. This is the first time the award has been presented.

The award is named for the long-time chief of the Technical Information Center of NASA Lewis, killed in a traffic accident in 1989. George Mandel was an active participant in the library profession for 30 years. The purpose of the award is to perpetuate his enthusiasm for the Aerospace Division of SLA, and his belief in the importance of participation in professional organizations.

The award provides financial support for SLA conference attendance. To qualify, a person must: present a paper, chair or coordinate a program, and participate in a panel or as a round-table leader—at an Aerospace Division program. This year the award was \$500.00.

Thom Pinelli presented a review of his research as a program speaker for the Aerospace Division of SLA at the Conference. He is the principal investigator for the NASA/DoD Aerospace Knowledge Diffusion Research Project. He

is Assistant to the Chief, of the Research Information and Applications Division, of NASA Langley Research Center, Hampton, Virginia.

The award is open to all members in good standing of the Aerospace Division of SLA, as of October 1, of the previous year. Applications are being encouraged. For 1992, apply by September 1, 1991 to Sandy Moltz, Aerospace Division Chair, at (617) 694-5363. For 1993, contact Susan Clifford, Chair Elect, at (213) 648-4668.

The **STI BULLETIN** informs NASA STI users about NASA's scientific and technical information products and services.

Direct suggestions, material to be considered for inclusion, and comments to Kate Kase at the address below, (301) 621-0140, or to Judy Hunter, NASA Headquarters, Code NTT, Washington, DC, (703) 271-5645.

RECON operational problems may be directed to the RECON Coordinator at:

NASA Center for AeroSpace Information
P.O. Box 8757
BWI Airport, MD 21240
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address,
ATTN: Registration Services



STI BULLETIN

Volume 21, Number 3

Fall 1991

Highlights From the Forecasts of Information UK 2000 A British Library Research Publication

The following text was previously published by Bowker-Saur Ltd., December 1990, and reprinted in the ICSTI FORUM, No. 6, June 1991, and presents the highlights of a program set up to explore likely trends in the way that information will be generated, handled, stored and used over the next decade and beyond. Eleven task forces of information experts each concentrate on a key area of change and look forward to key developments likely to become future possibilities.

The technical environment

During the next ten years, changes in the technical environment will come about by improvements in existing technology rather than by startling innovation. The main trends in hardware development will be in the direction of faster processors, increased memory and cheaper mass storage, with a very rapid take-up of parallel computing techniques. Hardware-based approaches to text retrieval may require a move away from inverted file systems to serial files, which can be more readily distributed across a parallel system; this would also allow quicker updating of text databases.

Speech, from a restricted vocabulary, and touch-sensitive screens, will increasingly be acceptable as input to computer systems, but keyboard and WIMP or GUI (graphical user interface) systems will continue to provide the primary means of access to text databases. Personal computers will continue to grow in power, and high resolution screens able to display two A4 pages simultaneously will become standard for them. Growth in the use of workstations will continue, and developments in RISC and VLIW microprocessor technology, coupled with improved networking techniques, suggest that networked workstations will shortly provide a viable alternative to minicomputers and smaller mainframes.

A growing proportion of databases will be full-text, but the retrieval systems providing access to large files of unindexed text will need substantial modification before they become hospitable to untrained end users. It is unlikely that natural language processing and speech processing techniques, or expert intermediary systems, will become operationally feasible access modes to large text databases because of the huge amounts of domain knowledge needed for their full implementation. For everyday use, similarity-based searching systems will provide more generally acceptable access to document databases than those based on the Boolean searching model.

There will be a continuing and accelerating move away from analogue towards digital systems for the capture, storage, reproduction and distribution of sound and of still and moving images and graphics. There will also be a trend towards disc rather than tape storage media. Digital Image Processing (DIP) systems, similar to fax machines but faster, are increasingly being used to capture, digitize and store very large amounts of document images on magnetic or optical discs. In the coming decade, digital signal processors will assist the reading and enhancing of very poor quality originals. Intelligent character and pattern recognition systems will recognize text in documents and convert it to ASCII for text processing or retrieval systems.

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INFORMATION UK 2000*(continued from page 1)*

Scanners will be greatly improved, and become capable of capturing a whole document instantaneously, instead of line by line. There will be increasing use of Group 4 fax machines, and CCITT Group 5 and 6 standards will be agreed.

Optical disc will be dominant in most applications and will gain ground on magnetic tape media, especially when higher performance rewritable optical units are developed. Optical discs carrying sound, text and graphics will have many applications in archives, computer aided learning, etc. WORM discs will retain and probably expand their market as an archival medium. Optical tape (DAT) has a less certain future.

The low relative performance of CD-ROM based on CLV recording will prevent it being used to provide multiple users with high performance access to digital databases, although it will remain as a personal publishing medium for use by PC and workstation users and for limited use in special CD-ROM enabled networks. CD-ROM is already seen as a data transfer medium, data being read to hard disc where high performance access is required. Directory and historical information will be carried on CD-ROM, with downloadable information supplied online or by satellite, to be stored and merged with the CD-ROM data.

The amount of paper that is stored annually will not diminish, although the amount of information stored digitally increases every year. Electronic publishing in commercial information provision, EDI in the corporate environment, and a move away from printed books in favor of video entertainment will begin to affect the use of paper, but most organizations dealing with the general public will still be communicating with them via paper in the year 2000. For commercial archives, Document Image Processing and systems based on digital optical storage will tend to replace microfilm systems, once concerns over standards, legality issues and the long-term durability of WORM discs are resolved. The problems of identifying, acquiring, storing and providing access to archival material in electronic form will be of growing importance.

Telecommunications

Existing Public Switched Telecommunications Networks (PSTN) are the main revenue earners for BT and its equivalents abroad. Much money will continue to be spent on network technology and on the evolution of PSTNs into more advanced forms such as the Integrated Services Digital Network. Voice traffic will continue to grow, but non-voice (fax, transaction traffic from point-of-sale terminals, traffic to central messaging facilities and file transfer traffic) will

grow faster. The design of the next generation of main network technology will be optimized for the combination of voice and non-voice traffic. Present packet switching networks will continue to expand, but will progressively be taken over by new voice and non-voice plant in the later 90s. The real price of inland and international calls over all public switched networks will continue to fall, and the quality and range of facilities to improve. Higher and higher capacity digital transmission links at rapidly dropping unit cost per bit conveyed will be available. By 2000, links up to at least 4Gbit/s will be available.

The use of satellites for private two-way voice and non-voice communications for business will soon be authorized in the UK; this could bypass the main operators. However, if the demand for private channels exceeds the fundamentally limited supply, prices could rise prohibitively. Very small aperture terminals are currently being used for specialized one-way data or picture satellite broadcasting to businesses such as betting shops; later in the decade there should be cheap and freely available facilities for online video distribution to defined user groups, such as local libraries.

It is most likely that by 2000 there will be a complex mosaic of distribution facilities and related services in the UK. There will no longer be uniform telephone or television services of the kind to which we are accustomed. A revolution in the design of customer premises equipment is expected. It will probably involve some combinations of wire and radio telecoms, computing, television and CD or CD-ROM functions inside homes and offices. Fixed wiring will progressively disappear. Most PCs will have standardized fast telecoms facilities built-in, with radio link capabilities for working into Personal Communications Networks. There may be a dramatically new generation of phone handsets with imaginative capabilities.

Publishing

The technologies which will affect publishing in the next decade are already available, but they will be applied more quickly in business-to-business publishing, and less quickly in entertainment and academic publishing. There will be a high rate of growth in the amount of corporate, reference and technical information distributed online or on CD-ROM. To the consumer, trade books and mass-market paperbacks will still look much the same as they do today, but there will be big changes in methods of production and distribution. Most professional publications will still be in printed form, but there will be a slow trend towards electronic distribution; some material will be distributed in both printed and electronic form, and some on floppy disc, CD-ROM or online only. More authors will use DTP systems to publish themselves, with resulting problems of bibliographic control.

(continued on page 4)

NACA Documents Database Project — Conclusions of the Study

Ruth S. Smith has assisted NASA with two analyses of the documents produced under the auspices of the National Advisory Committee on Aeronautics (NACA). The results of the latest study have been submitted for publication in an upcoming issue of *Sci-Tech News*, a bulletin of the Special Libraries Association, in an article titled "The NACA Collection: When Old is New Again." Below are the abstract and several conclusions drawn in Ms. Smith's article.

Abstract

Renewed interest in early aerospace research led NASA to establish a NACA Documents Database Project to make the records and documents from the National Advisory Committee on Aeronautics (NACA) collection more readily available to users. Results of an initial study helped to identify holdings, availability, bibliographic records, and problems in creating a definitive NACA Documents Database and providing access to the documents. Working groups, involving librarians and technical specialists from the NASA Centers and NASA's contractor community, are pursuing specific objectives. A Project Plan calls for completion of a "definitive" database of NACA documents, by the end of fiscal year 1992.

Conclusions

Various collections of NACA documents exist. The real extent of overlap and/or gaps is still not known. No single center can claim a complete collection of NACA and non-NACA documents. *[Non-NACA documents were defined by the study committee to be those aerospace research results that NACA acquired from other sources.]*

Bibliographic records for NACA documents are available among the Centers, usually in card files. Bibliographic records are available electronically from three of the Centers: Redstone Scientific Information Center, NASA Langley Research Center, and the NASA Center for Aerospace Information.

There are inadequacies in the current NACA online file that need to be fixed. Although the file is not complete, it is being used continually.

Recommendations

The study report recommended a phased approach in taking the next steps:

Phase 1: NACA Bibliographic Records. Bring the quality of the NACA Documents Database to a level acceptable to users and complete the Database.

Phase 2: Access to Database Records. Develop products and services to help users maximize use of the Database.

This includes developing products and programs to facilitate use of the Database.

Phase 3: NASA Document Availability. Assure that the documents in the Database are available. This includes establishing archival responsibility and addressing the problem of document preservation. ♦

Policy Change for Document Ordering

The following policy change is effective immediately. If you have not received a document that you normally would receive through your initial distribution and/or your ADDS or Standing Order subscriptions, you must report the non-receipt to NASA CASI as soon as possible. Any claim of non-receipt reported later than one year after the original distribution date will be considered to be an individual document order, and standard applicable fees will be charged for filling the request. For more information, call Document Request Processing at 301-621-0147.

Reminder to All NASA STI Program Users

Due to a recent policy change, subscribers of *NASA Scientific and Technical Aerospace Reports (STAR)*, and the *NASA Thesaurus* will be charged standard rates for all copies of the publications. The new domestic standard rate for *STAR* Volume 30 (1992) is \$114.00 per subscription; the 1991 edition of the *NASA Thesaurus* is priced at \$85.00 per 3-volume set.

Also please note that all returned *STAR* renewal forms and *NASA Thesaurus* request forms will be used to update our distribution files and generate invoices. Any organization that wishes to discontinue either publication should indicate such on the appropriate form. Any organization that does not return the form by the deadline printed on the form will be dropped. For more information, call Registration Services at 301-621-0153. ♦

Key Personnel Changes

Appointment of Deputy Associate Administrator for the Office of Space Systems Development

Dr. C. Howard Robins, Jr., has been named the Deputy Associate Administrator for the new Office of Space Systems Development. He was appointed Associate Administrator for the former Office of Management in January 1989. Dr. Robins began his NASA career more than 30 years ago as a student aeronautical engineer trainee. He worked at the Langley Research Center and the Johnson Space Center before transferring in 1976 to Headquarters where he managed programs in the Offices of Aeronautics and Space Technology and Space Science and Applications. He was selected for the President's Executive Exchange Program in 1983 and completed an industrial assignment as director of research and development at the Newport News Shipbuilding and Drydock Company before returning to Headquarters in 1984.

Appointments of Associate Administrator and Deputy Associate Administrators for the Office of Management Systems and Facilities

Benita A. Cooper was named Associate Administrator for the newly created Office of Management Systems and Facilities in early October 1991. Prior to this appointment, she was the Assistant Administrator for the Office of Headquarters Operations from 1988, and was previously the Director of Management Operations at the Goddard Space Flight Center from 1980 to 1988.

The new Office will provide synergy between operational responsibilities and Agency policy development in the areas of Information Systems, Facilities and Maintenance, Logistics, Aircraft Management, and Security. The Office will also be responsible for Industrial Relations, the Board of Contract Appeals, and the Inventions and Contributions Board. The NASA Headquarters Equal Opportunity function will be consolidated within the existing Office of Equal Opportunity Programs.

In announcing this consolidation, Admiral Truly said, "Benita Cooper is a natural choice to lead this new organization, which will nicely complement our Office of Human Resources and Education. Both she and Howard Robins have played a major role in making this consolidation a success. This will greatly facilitate our efforts to enhance total quality management in NASA's institutional management."

Brigadier General Elmer T. Brooks, USAF (Retired), was appointed Deputy Associate Administrator (Agency Programs), and Michael D. Christensen was appointed Deputy Associate Administrator (Operations) for the Office of Management Systems and Facilities. General Brooks joined NASA in 1988 as Assistant for Special Projects, Office of the Administrator. He served as the Acting Deputy Associate Administrator for Management from February 1989 to September 1990, when he was appointed as the Deputy Associate Administrator for the Office of Management. Mr. Christensen came to NASA in 1967, and has served in various capacities at Headquarters, Johnson, Goddard, and Kennedy, as well as serving for a time with the Department of Agriculture. Immediately prior to this appointment, Mr. Christensen was with Headquarters Operations. ♦

INFORMATION UK 2000

(continued from page 2)

There is a possibility that academic publishing may be relocated within the mainstream activity of universities.

Piracy will continue to be a problem, and the issues of copyright and intellectual property, rendered more acute by the effect of technology, will not be satisfactorily resolved by the end of the decade. The slowness of publishers to react to change will allow new players, including smaller organizations which are able through IT to address niche markets, to take the commercial initiative, and many of the more conservative publishers will fail.

The rate of change to electronic format for STM journals will vary considerably, being to some extent dependent on authors' disciplined use of compatible software. In some areas, printed journals may disappear because the major product of the area is data, and deposit of data in a databank may be accepted as equivalent to publication of a journal article. Publication on CD-ROM, with the end users paying for each contribution printed down or downloaded, as in the ADONIS system, may also lead to the effective demise of the journal structure. The trend is towards recognition of the article rather than the journal as the unit of publication, but important specialist journals are not expected to disappear very rapidly. If suitable metering mechanisms are implemented for electronic versions, a reduced subscription rate would be charged for a limited number of viewings of a publication. On demand delivery of full text will be more common.

These changes will have a significant effect on the profitability of operations, and there will be a move away from revenue-sharing approaches such as royalty-based payment, which are not also tied to marketing or promotional goals. Online pricing policies will move towards payment by results, and CD-ROM services will use subscription charges. Customers will have higher expectations of information service suppliers with regard particularly to accuracy and currency. Relations with end users will be governed by contract to cover legal aspects and protect the ownership of the data. There is likely to be litigation on the issue of responsibility for accuracy.

Electronic books will only appeal if they have features over and above those associated with the conventional book. Readers will assess their utility as well as their information content, and base their decision to buy partly on the features available. They will be sold primarily by direct mail for a year or two, but by 1995 may be widely available in bookshops. This will largely be dependent on pricing policies. Electronic book technology combined with on-demand publishing concepts makes the one-off novel or monograph a

(continued on next page)

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possibility. Customers could have their cartridge or computer store loaded with selected data from different sources, for personalized textbooks and so on. Towards the end of the decade, books and journals may begin to appear on Smart Card for reading and manipulating on a PC or pocket computer. Another possibility is that on-demand publishing, giving the customer a choice of type style, paper binding and so on, will be available, bringing benefits by reducing stockholding and distribution costs.

People and society

It is estimated that the world population will reach 6 billion by 1999 and nearly 7 billion by 2010. During the same period, the population growth for most Western European countries is expected to decline almost to zero. By the year 2001, the population of the United Kingdom will reach 59 million, and the age structure of the UK population will change markedly. The proportion of people of retirement age will increase dramatically, entirely because of a rise in the proportion of the very elderly. There will be fewer "young" pensioners in the age range 60/65-74, but many more aged 75 and over. The family formation group aged 25-44 and the middle age group aged 45-59 will increase by around 16.5 percent, but there will be a sharp and inevitable decline in the number of 15-24 year olds.

The number of people of working age will increase by more than 3.4 million, and will constitute a larger proportion of the whole population. Unemployment is predicted to rise to 4.8 million by 1995, but changes in employment policies, such as contracting-out and the encouragement of self-employed status, may reduce the level of unemployment. By the middle of the decade, blue collar occupations will account for only 40 percent of jobs, and unemployment will largely affect the lower end of the job market, while there will be increasingly high demand (and reward) for the highly skilled.

The population of the United Kingdom has been becoming increasingly multicultural for many years, and the trend will accelerate with the continued pressures for political and economic integration of the European Community. The advent of the Single European Market offers opportunities of larger markets for English language information goods and services, and for products packaged for local markets, but also brings the threat of increased competition from other European publishers, and the possibility of takeover of UK companies.

The pressure for a Freedom of Information Act will continue, and is likely to grow during the decade, stimulated by

pressures from the European Community and increasing concern with "Green" issues. If such an Act becomes law, it will stimulate public sector information activity, because of the need for effective information management to comply with its requirements. The balance between open and unrestricted exchange of information and the protection of individual rights, economic incentives and the sovereignty concerns of nation-states will be a major public concern.

The ability to integrate organization and retrieval of all data types (text, voice and image) will be available by the end of the decade, and will begin to be applied to dissemination. Current information will be captured and stored in machine-readable form, but conversion of historical data in paper form will still be a problem. There will be more, and more varied, sources of electronic information, and more opportunities for participation in the information market. Data communications, and the ability to link electronically with other organizations' systems will be critically important.

Because of people's inability to change work habits with the same speed as the development of IT, the specialist information intermediary role will grow for a while, but as the organization and structure of information sources becomes more flexible, molded by the ways in which people use information, and as IT skills become more widely available, the demarcations between different sorts of information professionals and (because of networking initiatives) between providers and users, will be increasingly blurred. Ultimately the need for end user and intermediary training will disappear.

Rising transport and accommodation costs, especially in the South-East, will encourage relocation of industry, and more workers are likely to work from their homes. Workers, particularly those with specialist skills, can expect to be offered more flexible patterns of employment, such as part-time working, home working, job sharing and self-employment. There may be an increase in telecommuting (working at home using a computer connected to the employer's premises), but there is little evidence so far of appreciable growth in this mode of working, and many people may continue to prefer to keep work and home separate. Telecommuting is more likely to develop as an addition to, rather than a replacement for, meeting at a central workplace.

There will be an increase in education at home via "electronic universities". Further education will be demanded by professionals requiring retraining, by housewives returning to work, and increasingly by retired or leisured persons studying for pleasure. The demand for fast, flexible and easily accessible information services will be stimulated by growing computer and information literacy acquired at school.

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INFORMATION UK 2000*(continued from page 2)***The library and information world**

By the end of the century, the LIS workforce, which should number about 20,000, will be 70 percent women, and over 50 percent of the workforce will be over 40 years of age. More than half the workforce will have a postgraduate diploma or master's degree in librarianship or information studies, supporting a first degree in another subject. Continuing professional development will become more important, and will become more varied in provision, with more subjects, a wider geographical spread and more variety in length of courses. Current interest in information management will continue. Opportunities to add to management skills throughout working life will reinforce demands for continuing education, and the distinction between initial and continuing education will blur. Some specialisms will be dropped from curricula because of lack of resources to support them, and they will be supplied by continuing professional development activities.

The funds available for library development are likely to be reduced in real terms. European influence will be more marked, and the lack of a national information policy may mean that the UK will lose its present leadership role in library and information matters. The strategy of most libraries will emphasize access to information over holdings, and budgetary constraints will shift to allow money to move from the purchase of books to the purchase of information. A regional "super-league" of very large libraries will develop as the basis of the holdings which other libraries will access, and continued growth in the volume of inter-library lending is expected. The local library may become a switching center rather than a resource, and a provider of documentation and training. End users will themselves become more active in database searching and other activities, such as direct document ordering and receipt, via their personal workstations. Networks will develop rapidly, as will campus-wide systems in higher education. Private sector equivalents will meet consumer resistance to the charges involved.

National library services will find it constantly harder to maintain service because of reducing support and funding, and will be obliged to seek full cost recovery for services supplied. The depth of treatment of new publications by British Library will be reduced, and bibliographic services, together with some other services, will be contracted out, and may meet private sector competition. The "public good" function of national libraries will be a subject for discussion.

The more active and better resourced parts of the public library service are likely to see their most significant role as

information management and delivery, and their work as the provision of information services and facilities broadly conceived to strengthen the cultural and intellectual life of the communities they serve. Guidance and counselling on information problems and resources will become more important as electronic availability gradually replaces the physical and local availability of stock.

Academic libraries will be under increasing financial pressure. Departments will have to finance their own electronic access to databases, and academic libraries may gradually become marginalized and consequently downgraded to "swotting sheds". Current trends towards the integration of computing and library services under the same management are likely to continue.

Retrospective conversion of the catalogues of most major universities will be essentially completed by the end of the decade. Virtually every academic library will have an operational online public access catalogue. Communication among academic library OPACs via JANET will be firmly established, and the range of databases accessible over the same network will continue to expand.

Towards the end of the decade we may be able to browse electronically in remote libraries offering electronic borrowing and tele-delivery. Users could, if they so desired, have their cartridge or computer store loaded with selected data from different sources, for personalized textbooks and so on. A few regional libraries could service the whole of the country's needs for tele-borrowing and the role of other libraries will become that of a switching center rather than a resource (other than for recreational works), and a provider of documentation and training. Similarly, users would be able to request music or video materials, either for capture and storage, or for immediate use. Such a facility could replace record shops and video rental outlets, and because very few copies of any individual product would be needed, the effect on the suppliers of raw materials would be significant, and the unit cost of each physical item produced would be high. Shifting from up-front purchase to payment by usage could also produce economic distortions, and the sharing of payments amongst rights owners would be administratively complex. In a world of electronic delivery, the distinction between borrowing and owning becomes academic. ♦

New Thesaurus Term Correction

Please note the following typographical error in the Summer issue of the *STI Bulletin*.

Incorrect Term Listing: F-177A AIRCRAFT

Correct Term Listing: F-117A AIRCRAFT

NASA / RECON Training Schedule 1992

Following is the 1992 NASA/RECON training schedule through June. All classes currently scheduled will be held at the NASA Center for AeroSpace Information near Baltimore, Maryland. Prices listed are for non-NASA personnel.

BASIC RECON	ADVANCED RECON
Wednesday, January 8	Thursday, January 9
Tuesday, February 11	Wednesday, February 12
Monday, March 9	Tuesday, March 10
Tuesday, April 7	Wednesday, April 8
Thursday, May 14	Friday, May 15
Monday, June 15	Tuesday, June 16

Basic RECON training is one day, at \$100.00 per person. Class size is limited to 12.

This session is designed for the beginning NASA/RECON searcher, preferably with some online experience. The content of the STI Database, as well as its file and record structures, are covered in detail, along with basic RECON commands. Search strategy formulation, Boolean logic, and query analysis are emphasized as they pertain to the NASA/RECON system. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

Advanced RECON training is one day, at \$160.00 per person. Class size is limited to 6.

The advanced training session is designed for the experienced RECON searcher. Basic text searching is reviewed, as well as in-depth text searching techniques. Advanced RECON system features and stored search formulation and editing are covered. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

NASA/RECON Training Registration

Pre-registration is required for all training sessions. To register, call CASI Online Services at (301) 621-0150. Our Registration Assistant is available to answer questions between 8:00 a.m. and 4:30 p.m., e.s.t., Monday through Friday. If a preferred session is closed, ask to be wait-listed. Each registrant will receive an individual confirmation letter.

Reservations may be cancelled or changed up to five (5) business days before the session. Cancellations after that date, and no-shows, will be billed for the full amount. Users are entitled to one free training class per new user ID.

You may be billed to a standing RECON purchase order, to a new purchase order, or you may pay with a company or personal check. Make checks payable to RMS Associates. ♦

NTIS PRICE SCHEDULES

(Effective October 1, 1991)

Schedule A

STANDARD PRICE DOCUMENTS AND MICROFICHE**

PRICE CODE	NORTH AMERICAN	FOREIGN
A01	\$ 9.00	\$ 18.00
A02	12.50	25.00
A03	17.00	34.00
A04-A05	19.00	38.00
A06-A09	26.00	52.00
A10-A13	35.00	70.00
A14-A17	43.00	86.00
A18-A21	50.00	100.00
A22-A25	59.00	118.00
A99	*	*
N01	60.00	120.00
N02	59.00	118.00
N03	20.00	40.00

Schedule E

EXCEPTION PRICE DOCUMENTS AND MICROFICHE**

PRICE CODE	NORTH AMERICAN	FOREIGN
E01	\$11.00	\$ 22.00
E02	14.00	28.00
E03	16.00	32.00
E04	19.00	38.00
E05	21.00	42.00
E06	24.00	48.00
E07	27.00	54.00
E08	30.00	60.00
E09	33.00	66.00
E10	36.00	72.00
E11	39.00	78.00
E12	43.00	86.00
E13	46.00	92.00
E14	50.00	100.00
E15	54.00	108.00
E16	59.00	118.00
E17	64.00	128.00
E18	69.00	138.00
E19	76.00	152.00
E20	88.00	176.00
E99	*	*

*Contact NTIS for price quote.

**Effective January 1, 1991, the microfiche copy of any new document entering the NTIS collection will be priced the same as the paper copy of the document.

IMPORTANT NOTICE

NTIS Shipping and Handling Charges
U.S. Canada, Mexico--ADD \$3.00 per TOTAL ORDER
All Other Countries--ADD \$4.00 per TOTAL ORDER

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POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

MOVING?

The NASA Center for AeroSpace Information (CASI) maintains the mailing lists and address file for most of the NASA network. In order to maintain accurate and up-to-date addresses and contact points for each user registered with CASI, please provide any recent or forthcoming changes below and return to:

ATTN: Registration Activity
NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757

CASI ID No.: _____ Phone: _____

Organization: _____

ATTN: _____

Address: _____

NASA Center Staff Changes

Mr. Robert Guz has replaced Donna McAllister as head of the Johnson Space Center Library.

Betty Fowler at Marshall Space Flight Center is now working with Joyce Turner in Technical Publications.

The *STI BULLETIN* informs NASA STI users about NASA's Scientific and Technical Information Program products and services.

Direct suggestions, material to be considered for inclusion, and comments to Kate Kase at the address below, (301) 621-0140, or to Judy Hunter, NASA Headquarters, Code JTT, Washington, DC, (703) 271-5645.

RECON operational problems may be directed to the RECON Coordinator at:

NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address,
ATTN: Registration Services

1992

NASA STI Program Participates in International Conference

Members of the NASA STI Program participated in the Aerospace Conference entitled **Management and Information: From Information Evaluation to Decision** from January 15-17, 1992, in Strasbourg, France.

The conference is the European forum of the Information-Documentation Committee of the Association Aeronautique et Astronautique de France (AAAF). Co-organizers with AAAF were the American Institute of Aeronautics and Astronautics (AIAA), Deutsche Gesellschaft fuer Luft-und-Raumfahrt (DGLR), and the Royal Aeronautical Society (RAeS).

This conference is the best international conference directly related to producers and users of worldwide aerospace information resources. Topics ranged from the decision-making process to information gathering and selection, industrial property, analysis and synthesis of information in technical centers, and integration of synthesized information in decision-making.

A paper, *Unification: An International Aerospace Information Opportunity*, by Gladys A. Cotter and Thomas F. Lahr, was presented at the conference. The paper reviews the NASA STI Program goals and current activities, and proposes maintaining compatibility among international aerospace information systems, eliminating duplication of effort, and sharing resources through international cooperation. Conference participants gave the presentation a positive reception.

The NASA STI Program shared an exhibit booth with the European Space Agency Information Retrieval Service (ESA/IRS), among a small number of exhibitors. Conference-goers flocked to the STI/ESA booth during breaks, and many expressed pleasure at seeing the NASA presence at the European conference. The exhibit was staffed by Jennifer Garland, NASA, and Philippe Mougnaud, ESA/IRS.

This conference proved to be an excellent forum for both formal and informal interchange with the NASA STI Program's European counterparts and users. ♦

Jennifer Garland, NASA STI Program (on right) and Philippe Mougnaud, ESA/IRS, staffing the exhibit booth during the Aerospace Conference in Strasbourg, France.

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CENDI: A STRATEGIC INTERAGENCY ALLIANCE IN THE 1990s

The CENDI Group is a Government interagency cooperative organization formed to improve Federal research and development (R&D) productivity and R&D information management systems through information exchange. The five member agencies - the Departments of Commerce, Energy, Defense, and Health and Human Services, and the National Aeronautics and Space Administration - sponsor more than 90 percent of federally funded R&D. Since information is a critical need in the research process, each of these agencies actively gathers and processes information from its own research process and research by others, including foreign information obtained through international exchange agreements. Each of these agencies maintains scientific and technical information (STI) databases of both on-going and completed R&D efforts, and CENDI provides a means for its members to share technologies, resources, ideas, information, management activities, and standards.

CENDI PRINCIPALS

STI managers or principals from the five member agencies comprise the CENDI interagency group. The principals collaborate under a Memorandum-of-Understanding (MoU). The table below lists the five member agencies and their STI managers.

HISTORY OF COOPERATION

In the 1960s, under the aegis of the Committee on Scientific and Technical Information (COSATI), Federal Council on Science and Technology, the managers of STI programs in the Federal Government adopted standard guidelines for cataloging technical reports. Through interagency agreements, agencies exchanged bibliographic tapes and cooperated on specific projects of interest. In the mid-1970s, COSATI was phased out due to changes in administrations and priority areas.

From the mid-1970s through the mid-1980s, the five member agencies cooperated on an ad hoc basis.

Beginning in 1982, the STI managers established regular but informal meetings to further cooperation. In 1984, a formal Interagency Agreement, signed by the STI managers, chartered CENDI. In 1987, the National Library of Medicine joined the CENDI group through a MoU Amendment. The cooperative activities grew to the point that ad hoc administration of the group gave way to the establishment of a CENDI Executive Secretariat. The Secretariat provides program management support services to CENDI principals and working groups. This includes expert technical assistance with regard to information policy, interaction with the technical community, and operational support such as organizing meetings and technical sessions. In general the Secretariat has a proactive role in developing opportunities for interagency cooperation. Bonnie C. Carroll is the current CENDI Secretariat Director.

WORKING GROUPS

Six formal working groups conduct CENDI programs in areas of mutual interest. A listing and sample activities of the groups are as follows:

Cataloging Standards Group chaired by Claire Tozier (DTIC)

- ◆ Revised ANSI-NISO Z39.23. ANSI/NISO approved and published The American National Standard Technical Report Number (STRN) Format and Creation, ANSI/NISO Z39.23-1990 in 1990.
- ◆ Produced a CENDI Format for Foreign City Authorities used as a reference tool by all agencies.
- ◆ Revised the CENDI Cataloging Guidelines used by all agencies.
- ◆ Created a CENDI format to catalog non-print media such as floppy disks and videotapes.

CENDI Principals

Agency	STI Activity	Principal
U.S. Department of Commerce	National Technical Information Service	Don Johnson, Acting Director
U.S. Department of Energy	Office of Scientific and Technical Information	Elizabeth Buffum, Program Manager
National Aeronautics and Space Administration	Scientific and Technical Information Program	Gladys A. Cotter, Director
U.S. Department of Health and Human Services	National Library of Medicine	Kent Smith, Deputy Director
U.S. Department of Defense	Defense Technical Information Center	Kurt N. Molholm, Administrator

- ◆ Redesigned agency Report Documentation Page (RDP) to create a joint CENDI RDP which is included in ANSI/NISO Z39.18-1987.
- ◆ Produced a database for the Report Series Codes Dictionary, 3rd Edition, published by Gale Research Company.

Indexing Group

chaired by M. Catherine Grissom (DOE)

- ◆ Submitted proposed projects for study. They propose to assess machine-aided indexing; inventory present verbalization rules used to input scientific notations; and identify common thesauri subject terms.
- ◆ Undertook study of verbalization standards of various agencies.

Standards (Technology) Group

chaired by R. L. Scott (DOE)

- ◆ Established forums to share standards expertise among agencies.
- ◆ Established ties with experts in the area of electronic information exchange standards.
- ◆ Began study of national and international standards related to CENDI agency operations.

This group includes members from other agencies, such as National Institute of Standards and Technology, as active participants.

User Education Group

chaired by Marcie Stone (DTIC)

- ◆ Held first Acquisitions/Selection Seminar on October 23, 1990. All five agencies participated in talks that covered selection policies, types of acquisitions included/excluded in the databases, database content, procedures for acquisition, and document exchange with other organizations.
- ◆ Maintains the CENDI Consolidated Exhibit Schedule.

Networking Group

chaired by Judy Hunter (NASA)

- ◆ Established to explore the various agencies networking projects to identify opportunities for experience sharing or joint projects.
- ◆ A paper entitled "Current Electronic Networking Capabilities at CENDI Organizations" has been completed and presented to CENDI Principals.
- ◆ A paper on future networking plans has been drafted and will be presented in the spring.
- ◆ Provides oversight/coordination for the Directory Project.

CENDI ACCOMPLISHMENTS

CENDI's major accomplishments are concentrated in four areas.

STI Policy

CENDI has become active in broad national/international issues that have an impact on STI agency operations.

External Relations

CENDI has interacted effectively with supporters, sponsors, customers, and information intermediaries to enhance and facilitate the flow of STI.

User Education

CENDI has provided cross-training for member agency staff and has also focused on programs to inform the user community about the resources of CENDI and the agencies it represents.

Operations

CENDI has fostered efforts to improve the efficiency and effectiveness of the operations of all participating agencies' services and products.

CENDI GOALS

CENDI has established four top priorities:

- ◆ Work with R&D managers to improve productivity.
- ◆ Provide the best technical data and information to all users.
- ◆ Improve the effectiveness and efficiency of all CENDI agency operations.
- ◆ Familiarize R&D managers and policy makers with the value of STI.

During the 1990s, CENDI will continue to devote significant energies to interagency cooperation through technical meetings, open forums, expansion of working group participation, resource sharing, cross-training, policy review, strategic plans, workshops, and technical presentations. CENDI will commit to study the next generation of information systems which will combine text, numeric, and image data in ways transparent to the end user. Finally, CENDI will work toward building networks with other agencies serving the science and technology user to optimize the flow of STI to position the United States on the cutting edge of technology.◆

(From STI-Tech News, the official bulletin for the Aerospace, Engineering, Nuclear Science, and Science and Technology Divisions of the Special Libraries Association, April 1991.)

New Thesaurus Terms

Subject terms recently added to the NASA Thesaurus are listed below. These terms are currently available on NASA/RECON. User suggestions for new terms are encouraged. Contact the Lexicographer at NASA CASI, (301) 621-0103.

AKEBONO SATELLITE

Use EXOS-D SATELLITE

ALUMINUM GALLIUM ARSENIDE LASERS

AUDIO TAPES

BINARY PHASE SHIFT KEYING

BIPHASE SHIFT KEYING

Use BINARY PHASE SHIFT KEYING

BPSK

Use BINARY PHASE SHIFT KEYING

C++ (PROGRAMMING LANGUAGE)

CAVITY FLOW

CFCS

Use CHLOROFLUOROCARBONS

CHLOROFLUOROCARBONS

DBR LASERS

DIAMOND FILMS

DISTRIBUTED BRAGG REFLECTOR LASERS

Use DBR LASERS

EARTH SCIENCES

ELECTROMAGNETIC MISSILES

ELECTRON HOLES

USE HOLES (ELECTRON DEFICIENCIES)

EXOS-D SATELLITE

GIBRALTAR

KYOKKO SATELLITE

Use EXOS-A SATELLITE

LASER ABLATION

OBJECT-ORIENTED PROGRAMMING

OZONE HOLES

Use OZONE DEPLETION

PARTICULATE REINFORCED COMPOSITES

PROPOSALS

TOTAL QUALITY MANAGEMENT

TQM (QUALITY CONTROL)

Use TOTAL QUALITY MANAGEMENT

VIRTUAL REALITY

NASA Scientific and Technical Information Program Foreign Literature Services Cost Schedule for 1992

The NASA STI Program's Foreign Literature Services are available to all U.S. Government or Government contractor personnel. These services include the following:

DUPLICATE CHECKING. We check all requests against a number of sources for any existing previous translation. If an existing translation is found, we will inform you how you can acquire a copy.

FREE COST ESTIMATES. Based on the document to be translated and the service options you select, we prepare a cost estimate and calculate an expected delivery date considering: The number of words and graphic elements, language, type of translation (non-English into English [regular] or English into non-English [reverse]), and type of delivery (standard or rush). A price schedule is provided below for your reference.

TRANSLATION. We provide you two paper copies of the completed translation, with binding and cover, by U.S. Mail unless you request other deliver media and/or electronic options in addition to or in place of the standard options. These options are available for a small additional charge:

Electronic Options (Text Only):

WordPerfect file on 5.25" diskette

ASCII or WordPerfect file delivered via

- NASAMail (ASCII or WP)

- Internet (ASCII only)

- CompuServe (ASCII or WP)

Delivery Options:

FAX delivery

Overnight delivery

2nd day delivery

Translation Cost Per Thousand Words

	Regular		Reverse	
	Rush	Standard	Rush	Standard
Chinese	\$66.00	\$50.00	\$76.00	\$75.00
French	\$57.00	\$46.00	\$68.00	\$66.00
German	\$57.00	\$46.00	\$68.00	\$66.00
Italian	\$56.00	\$44.00	\$67.00	\$65.00
Japanese	\$66.00	\$50.00	\$76.00	\$75.00
Russian	\$56.00	\$45.00	\$67.00	\$65.00
Spanish	\$53.00	\$41.00	\$63.00	\$61.00
Others	\$66.00	\$50.00	\$81.00	\$79.00

FOR ADDITIONAL INFORMATION, CONTACT: NASA Foreign Literature Services, Code JTT, Washington, DC 20546. Call (703)685-1864 between 8:00 a.m. and 4:30 p.m., EST, or fax (703)685-2483. ♦

Technical Information Resources Session at Aerospace Sciences Meeting

The American Institute of Aeronautics and Astronautics (AIAA) Technical Committee on Technical Information (TCTI) sponsored a session on the "Productivity of Aerospace Information Resources" on January 9, 1991, at the AIAA Aerospace Sciences Meeting and Exhibit in Reno, Nevada. The scope of the TCTI is to promote the development of aerospace scientific and technical information services and the awareness of aerospace information resources. This was the first session sponsored by TCTI and the papers were well received and the discussions lively and interesting. Following is descriptive information about the papers presented.

Technology and STI Policy and the Competitive Position of the U.S. Aerospace Industry

Peter Hernon, Simmons College

Thomas E. Pinelli, NASA Langley Research Center

With its contribution to trade, its coupling with national security, and its symbolism of technological strength, the U.S. Aerospace sector holds a unique position among our nation's industries. Proper technology and STI policies are crucial to maintaining this position. However, two problems exist. First, the U.S. does not have coherent technology or STI policies, but should. Second, the relationship between and technology and an STI policy is not understood by the policymakers. A rationale for linking the two is given.

Unification: An International Aerospace Information Issue (NASA TM-105101)

Gladys A. Cotter, NASA STI Program

Thomas F. Lahr, NASA STI Program

NASA is recognized for its continued development and maintenance of an international aerospace database. In recent years, changes in the aerospace industry and in information technology have led to the development of aerospace information initiatives in other countries. This paper reviews current NASA goals and activities with an emphasis on the potential for resource sharing through international cooperation.

Issues for Effectiveness in Scientific and Technical Information Management

Barbara Lawrence, AIAA Technical Information Service

Many technical libraries and information centers in aerospace are underused and undervalued. Because the majority of these organizations are classed as overhead cost centers, they face not only cutbacks, but often a struggle for survival. Their loss can severely impact the engineer's access to information. Examples of techniques to enhance the value of information resources are recommended.

Hypermedia: Information Management in the Future

Solomon H. Simon, LTV Aerospace and Defence Company

Hypermedia creates a simple way to use complex information by providing a mechanism for storing, retrieving, and interconnecting information of all types, both static (text and graphics) and dynamic (sound, animation, and video). Future information management systems will use hypermedia technology to form compound, multimedia documents.

An Analysis of CD-ROM as a Long-Term Archiving Solution

Denis Oudard, Digipress

The history of archiving systems is reviewed. A methodology is described which will enable archivists to select the medium and archiving system best suited to preservation of the integrity and long-term utility of digital data.

A Case Study in Resource Sharing: United Technologies Library & Information Resource Services

Jean G. Mayhew, United Technologies Corp.

Resource sharing maximizes the return on dollars invested in information and information retrieval systems. United Technologies information sharing philosophy and methodology are described as an example of how centralized procurement of information can be managed to ensure maximum availability and quality throughout a multidivisional organization.

Technical and Competitive Value through Productive Use of Patent Information

Rosalind Cheslock, Martin Marietta Laboratories

Patent fundamentals are reviewed, with emphasis on their dual role as both information sources and legal documents. While use of patent literature to support the patent process itself is discussed, the major focus is the importance of patents as sources of both essential information about technological developments and key business insights. An underlying theme throughout is the contribution of online databases to the patent search process.

Critical Technologies for Transfer and Exploitation

John Porter, Sverdrup Technology Inc.

Recent published critical technology lists are reviewed and compared. Methods to apply these to both short-range and strategic planning in industry, academia, and government are described. The relationships between tactical thinking and technology transfer are discussed.

Copies of the papers presented are available from the AIAA Technical Information Service Library, 212/247-6500, ext. 230 or 231. For more information about the AIAA TCTI, write to Ms. Jean G. Mayhew, Chairperson, United Technologies Research Center, Silver Lane, East Hartford, CT 06108. ♦

IN MEMORIAM

We are sad to report that Adelaide del Frate passed away on December 24, 1991. This article was printed in the January 1992 issue of Sci-Tech News after the announcement of her retirement. It is reprinted with permission here to acknowledge her outstanding achievements. She will be missed by many in the Federal library system and the NASA community.

Adelaide del Frate, Tops In The Field

By Denise Bedford

Adelaide del Frate has had a colorful career in the field of library operations. She joined the National Aeronautics and Space Administration Cambridge Research Center in 1965, where she served as Head Librarian until 1969. When the center closed in 1969, she joined the Goddard Space Flight Center staff as Head of the Library Branch. She brought to Goddard a vision of the future and a dedication to accomplishment that few in the field recognized then... but many recognize now.

Addie was a leader in opposition to the A-76 Law. While many in the field stated opposition to the law, few supported their words with actions the way Addie did. As a result she was successful in protecting the Goddard Space Flight Center libraries in Greenbelt and Wallops. And, while she opposed the practice of contracts for library services and support, she was a rare bird in the professional support and advancement she offered to librarians working in the contract environment. Addie treated contract librarians with whom she worked as partners and professionals, not adversaries. With Herb White, she was one of the early supporters of performance-based contracts in the Federal library and information center environment. Performance-based contracts included mechanisms with incentives for quality performance and demonstrated initiative, thereby negating the necessity of awarding contracts to the lowest bidder.

She has been a leader in the Washington, DC, chapter of SLA and in national activities, as well. Addie's association activities also included ALA and its many divisions, and ASIS. Through this spectrum of activities, and her keen intellect, she has distinguished herself as a speaker at national library conventions and other functions.

Addie also gave freely of her time supporting local libraries. She served many years as a board member for the Montgomery County Public Library's Chevy Chase branch, presenting and defending the budget before the Montgomery County Council. She also provided insight and directions in the selection and implementation of an automated system for the library.

For five years, Addie has been NASA's Administrative Librarian at NASA Headquarters, coordinating the full implementation of the Aerospace Research Information Network (ARIN). This complex task necessitated the acquisition and implementation of a turnkey system. Addie succeeded in acquiring and implementing NOTIS at a time when other federal libraries were only beginning to think of automated support.

As Administrative Librarian she also acted as gatekeeper to legislative information for libraries in general and for NASA libraries in particular. She also initiated a continuing education program for NASA Federal and contract librarians, using videoconferencing to keep professionals informed about current and prospective developments in the field. Topics in the program included expert systems, linked systems, authority file flips, copyright developments, output measures, and the NASA science network.

The first video conference was held in late 1988, and in addition to educating librarians, the conferences provided them a forum for discussing implementation of ARIN modules, facilitating decision-making in a consortium environment, and keeping them informed and involved in the NASA STI Program. The results of this was a cohesive network of librarians at the top in charge. Lee Jarabek at the NASA Lewis Research Center also said the videoconferences helped librarians place voices and faces with names, essentially adding a human element to providing service.

Humane also describes the way Addie led her life. In addition to the products and services she developed, Addie also made people a focus of her talents. One way was to assist shut-in individuals in the area. Another way was the day-to-day interaction she had with librarians. She encouraged others, by example, to set high personal performance standards. Since she also wanted everyone to succeed, she offered her advice, ideas, and encouragement freely.

Addie always was in control of herself and the situation, too. To illustrate, I remember when she was driving herself, Carolyn Floyd, and me back to a hotel in Boston. We seemed to be lost, at least temporarily, and she was not troubled at all. To explain how she felt at the time, she shared some of her father's wisdom with us. "What are you worried about?" her father asked one day when the family also seemed lost. "You're in America, and you speak English."

Well, NASA now must find a person to guide the libraries as Addie did. Those who have worked for her say that she will be hard to replace, primarily because of her importance to the aerospace information arena as an innovator. ♦

NASA / RECON Training Schedule 1992

Following is the 1992 NASA/RECON training schedule through September. All classes currently scheduled will be held at the NASA Center for AeroSpace Information near Baltimore, Maryland. Prices listed are for non-NASA personnel.

BASIC RECON

Tuesday, April 7
Thursday, May 14
Monday, June 15
Wednesday, July 8
Wednesday, August 12
Wednesday, September 9

ADVANCED RECON

Wednesday, April 8
Friday, May 15
Tuesday, June 16
Thursday, July 9
Thursday, August 13
Thursday, September 10

Basic RECON training is one day, at \$100.00 per person. Class size is limited to 12.

This session is designed for the beginning NASA/RECON searcher, preferably with some online experience. The content of the STI Database, as well as its file and record structures, are covered in detail, along with basic RECON commands. Search strategy formulation, Boolean logic, and query analysis are emphasized as they pertain to the NASA/RECON system. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

Advanced RECON training is one day, at \$160.00 per person. Class size is limited to 6.

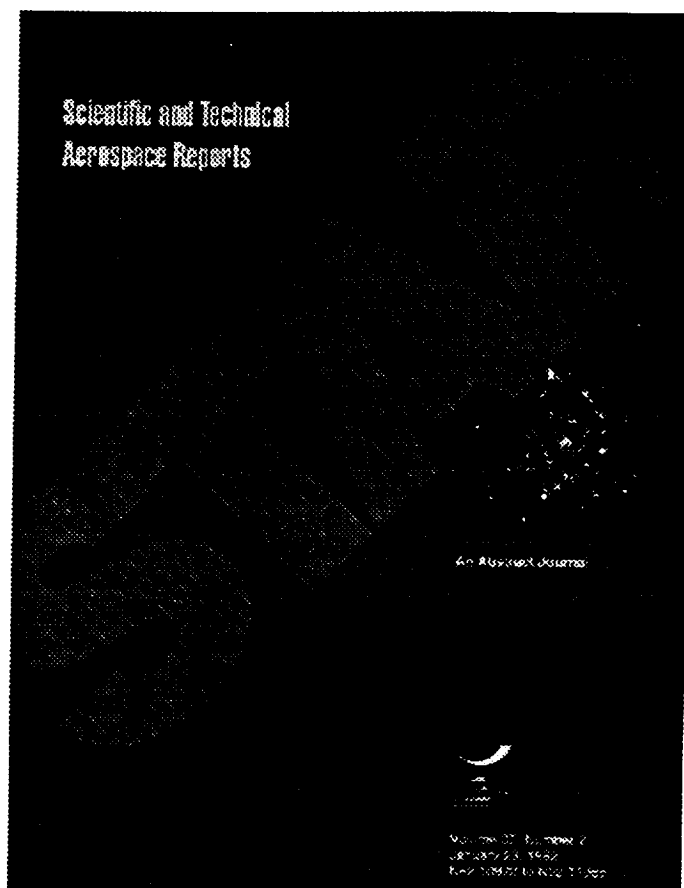
The advanced training session is designed for the experienced RECON searcher. Basic text searching is reviewed, as well as in-depth text searching techniques. Advanced RECON system features and stored search formulation and editing are covered. A series of lectures is combined with hands-on practice. Refreshments and lunch are provided.

NASA/RECON Training Registration

Pre-registration is required for all training sessions. To register, call CASI Online Services at (301) 621-0150. Our Registration Assistant is available to answer questions between 8:00 a.m. and 4:30 p.m., ET, Monday through Friday. If a preferred session is closed, ask to be wait-listed. Each registrant will receive an individual confirmation letter.

Reservations may be cancelled or changed up to five (5) business days before the session. Cancellations after that date, and no-shows, will be billed for the full amount. Users are entitled to one free training class per new user ID.

You may be billed to a standing RECON purchase order, to a new purchase order, or you may pay with a company or personal check. Make checks payable to RMS Associates. ♦



Take a New Look at STAR and NOVA

As you may have noticed, the covers of *STAR* and *NOVA* were recently redesigned. This change is part of the STI Program's work toward creating a family look for some of its mainstream announcement publications. Beginning with *STAR* 8, some improvements to the content and its presentation will also be made, thanks to the revised Input Processing System at the NASA Center for AeroSpace Information. Because documents are now being accessioned into the STI Database more quickly -- on a weekly basis, rather than a semi-monthly basis -- the citations within *STAR* will now be in accession number order within category, as opposed to being in sequence from first page to last. And to assist you in finding document citations more easily, page number references have been added to all of the indexes. In addition, an index listing by accession number is now available. ♦

NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757

Official Business
Penalty for Private Use \$300

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POSTAGE & FEES PAID
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CENTER FOR AEROSPACE INFORMATION
ATTN: JUNE SILVESTER
PRODUCT QUALITY
P O BOX 8757 BWI ARPRT
BALTIMORE MD 21240



MOVING?

The NASA Center for AeroSpace Information (CASI) maintains the mailing lists and address file for most of the NASA network. In order to maintain accurate and up-to-date addresses and contact points for each user registered with CASI, please provide any recent or forthcoming changes below and return to:

ATTN: Registration Activity
NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757

CASI ID No.: _____ Phone: _____

Organization: _____

ATTN: _____

Address: _____

The *STI BULLETIN* informs NASA STI users about NASA's Scientific and Technical Information Program products and services.

Direct suggestions, material to be considered for inclusion, and comments to Ardeth Taber, NASA Headquarters, Code JTT, Washington, DC, (703) 271-5546.

RECON operational problems may be directed to the RECON Coordinator at:

NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address,

ATTN: Registration Services

STI BULLETIN

Volume 22, Number 1

Spring/Summer 1992

NASA Participation in AGARD Research Agenda - Preliminary Report

On April 7-9, 1992, the NATO Advisory Group for Aerospace Research and Development (AGARD) Technical Information Panel (TIP) conducted a workshop in Lisbon, Portugal to develop a research agenda on issues related to scientific and technical information (STI) management (funding, production, collection, organization, and transfer of STI) and policy (legislation, organizational practices, and decisions).

management, dissemination, and use of STI. It was designed to provide a basis from which to select and initiate systematic studies of areas of specific opportunities for improving access to and use of STI. This agenda stimulated thinking about the role of research and the opportunities for the conduct of research. It also provided ideas, approaches, and strategies to assist in the advancement of the information profession or discipline, and improve the overall quality, quantity, and impact of that research.

The AGARD TIP Research Agenda Subcommittee selected three broad categories which were of interest to the nations, namely:

User and Usage Studies to examine user needs issues and to address information economy as well as diffusion of knowledge.

Information Access to examine user awareness issues to address the availability and use of STI as well as to identify and locate information sources.

Organization and Transfer of Information to examine information transfer issues to address reduction of barriers in retrieval and transfer of STI and to ensure the quality and integrity of the information.

The TIP considered this workshop to be of extreme importance, not only because it evoked and represented responses at individual, organizational, national, and international levels, but because it also provided an international agenda for research in STI issues, which, in turn, would enhance aerospace and defense research and development through more effective

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Dr. Thomas Pinelli, Langley Research Center

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The STI Program in Action:

Research That Suits an Astronaut

Jim Bagian, an astronaut since 1980, says the path between his office and the Medical Sciences library at the Johnson Space Center is well worn.

As an M.D. who also has a degree in mechanical engineering, Bagian's specialty is aerospace medicine. His broad academic background has fostered his broad interests as both astronaut and researcher.

"Fluorescein angiography," "capillary permeability in the retina," and "cerebral edema" are just a sampling of the kinds of topics Bagian typically investigates, usually with the able assistance of STI Program research specialists.

"For the projects I work on," he says, "to understand where you're going, you first have to understand what's already been done. It's the only sensible, efficient way to proceed. That means I need rapid access to the literature, and that's what the Medical Sciences library here gives me."

The process is simple enough. Bagian gives the STI Program librarians key words for them to do an online search. Then they send him abstracts of related citations, and he tells them which paper documents he wants.

Bagian says one of his most important projects to date was as the astronaut office lead in the design and development of the shuttle launch/entry suit (LES). As an astronaut with two shuttle missions to his credit, the doctor knew the critical need for such a suit.

"The suit is particularly important if we have to bail out during ascent," he says. "All of the astronauts have to wear their suit for launch. Fortunately, nobody's had to bail out. But in case they do, we've tested the suit for its ability to withstand a variety of stresses." For example, in a bailout, astronauts might have to endure hours of immersion in icy ocean water. Wearing the LES, with its

built-in flotation device, astronauts can easily withstand that contingency and countless others.

"The librarians really know technically what's going on, especially in the life sciences areas," he says. "Their work especially helps me at the beginning of projects. When I'm wearing my escape suit, I'm often reminded of how much we all benefit from their skills." ♦

AGARD Research Agenda

(continued from page 1)

Dr. Thomas Pinelli, Langley Research Center, chaired the User and Usage Studies workshop session; Dr. Peter Hemon, Professor, Simmons College, chaired the Information Access workshop session; and Dr. Bill Tuck, Professor, University College, London, chaired the Organizational and Transfer of Information workshop session.

The workshop elicited a great deal of interest; 24 non-TIP members attended the workshop. United States attendees included Dr. Linda Hill from the STI Program Office and Ms. Lee Jarabek from Lewis Research Center. Mr. Walter Blados, also from the STI Program Office, conducted the workshop. A final AGARD report will be issued in September. ♦



Lee Jarabek, Lewis Research Center

NASA STI Program Participates in ICSTI General Assembly

Thomas Lahr, International STI Program Manager, participated in the General Assembly and working group meetings of the International Council for Scientific and Technical Information (ICSTI). The meetings took place in Berlin, Germany, May 17-20, 1992.

Highlights of the General Assembly were as follows:

- Election of officers for 3-year terms
 - President, Kent Smith, National Library of Medicine, USA
 - Vice President, David Russian, British Library, UK
 - General Secretary, Daniel Confland, DIST, Ministere de la Recherche et de l'Espace, France
 - Treasurer, Ronald Wigington, Chemical Abstracts Section, USA
- Election of Executive Board for a 3-year term
 - Council for Scientific and Industrial Research, South Africa
 - International Union of Geological Sciences
 - Royal Society of Chemistry, UK
 - American Institute of Physics, USA
 - Engineering Information, USA
 - European Patent Office, Netherlands
 - Fachinformationszentrum Chemie, Germany
 - INIST-CNRS, France

The assembly amended their statutes and bylaws and discussed cooperation with European Community Committee DG XIII on the IMPACT 2 project.

The membership committee reported no dues increase for this year, and they are actively recruiting new members.

All working groups presented status reports. The Working Group on Economic Issues has nearly completed a country profile handbook for ICSTI members who deal with Eastern Europe, starting with Hungary; the Working Group on Interdisciplinary Searching is preparing an article on problems and suggested remedies; the Working Group on

Education and User Needs is writing a book on user friendly accesses to STI databases. Some other working groups are Publications, Economics Issues, and Electronic Publishing. Because these groups meet only once or twice a year, their progress is slow.

The ICSTI meetings are an important forum for exchange of information and ideas with other worldwide database producers, vendors, and publishers.

For additional information on this meeting and on ICSTI in general, call or write to Tom Lahr, International STI Program Manager, NASA Headquarters, Code JTT, Washington, DC, 20546, (202) 358-1398.

Annual Meetings

The Life Sciences Group and Election and Education and User Needs Groups, Biotech Information and User Education Session will meet May 16-19, 1993, at the Williamsburg Lodge, hosted by NLM.

In 1994, the Royal Society for Chemistry hopes to sponsor a session on implications of intellectual property in an electronic environment.

The European Patent Office is proposed to host the 1995 meeting in The Hague.

New Thesaurus Terms

These new thesaurus terms are currently available on NASA RECON. Your suggestions for new terms are welcome—call CASI at (301) 621-0103.

ARAMID FIBER COMPOSITES

ARAMID FIBERS

FIBER VOLUME FRACTION

FOUR-WAVE MIXING

HYBRID COMPOSITES

RESIN TRANSFER MOLDING

REVERSE ENGINEERING

NASA/UK Users Meeting Held

The first NASA-sponsored database users and contributors workshop outside the United States was held in London on March 23, 1992. Gladys Cotter, Director, NASA STI Program and Tom Lahr, International STI Program Manager led the workshop. This NASA/UK Users Meeting was hosted by IRS-Dialtech, the UK representative of the European Space Agency/Information Retrieval Service in conjunction with the British Library's Science Reference Information Service. More than 30 people attended, representing a good cross-section of British aerospace industry and research, government agencies, and academia.

The objectives of the NASA STI Program, as defined by NASA's STI Council, were explained, especially as they relate to foreign input and use. Historically the subject scope and coverage of the database has been dictated solely by the requirements of the NASA research community. In the interests of expanding our foreign coverage we are actively seeking the fuller cooperation of foreign participants. Their needs are now being considered and, as a result, the NASA STI Database is becoming truly international in scope. One way we are accomplishing this objective is by revitalizing current foreign exchange agreements and by signing new ones. We are coordinating with other agencies, both in the U.S. and internationally, to create joint strategies for acquiring foreign material. We also are using citations created by other agencies to a greater extent than before.

The benefits of an international aerospace database were discussed, as well as the mechanisms for achieving this. With scarce resources in all areas of government and industry, the NASA STI Program is reviewing its exchange programs to factor in the changing requirements within the international community. NASA reviewed current objectives and activities with a view toward maintaining compatibility among international aerospace information systems, eliminating duplication of effort and sharing resources through international cooperation whenever possible.

With this first face-to-face meeting with our UK users, we were able to obtain some direct feedback

on our policies and practices. One useful suggestion to increase database input was to revise and distribute the out-of-print NASA Guidelines on Report Literature. NASA has subsequently undertaken this job.

Although there was general satisfaction with the subject scope of the database, the attendees noted that the scope changes were always made considering the needs of the NASA programs only. The NASA STI Program is looking toward establishing

continued on page 5

Now Available

STI — MANAGING A UNIVERSE OF INFORMATION

A new video produced by the NASA Scientific and Technical Information (STI) Program is now available. Titled "Managing a Universe of Information," this 5½ minute presentation gives a brief introduction to the NASA Scientific and Technical Information Program, highlighting some of the services available and showing why they should be used. It is geared to researchers, scientists, and end users; it emphasizes the value of contributing to and using STI. The video presents the program in a very upbeat, positive, and interesting way. We plan to show the video at NASA STI Program exhibits; STI tours, briefings, and overviews; and other customer services programs.

The video was prepared in conjunction with the Video and Motion Picture Group at NASA Lewis Research Center. Additional footage was shot at the Library of NASA Goddard Space Flight Center, at the NASA Headquarters STI Program Office, and at the NASA Center for Aerospace Information.

Each NASA Center STI Program and Library has copies for its use. Loan copies in VHS or ¾ inch format are available from:

NASA Center for Aerospace Information
P.O. Box 8757
Baltimore, MD 21240-0757
Phone: (301) 621-0390 (DC), (410) 859-5300 (Balt.)
FAX: (301) 621-0134

NASA/UK User Meeting*(continued from page 4)*

an advisory council that would allow the database users to have a voice in scope and coverage decisions.

Most attendees agreed that references appeared in the database in a timely way. Some felt that the database should be updated more frequently.

NASA has since arranged to send the update tapes to ESA on a semimonthly basis. This means that the ESA/QUEST version of the database will be updated twice a month, as are the RECON and DIALOG versions.

Other issues discussed, such as how to increase database comprehensiveness and what constitutes an equitable basis for exchange, did not lend themselves to such swift or simple solutions. However, it was agreed that this meeting had proved to be an effective forum for communications between NASA and our UK partners. We now have a better appreciation of each other's concerns and objectives. A follow-up meeting has been suggested. We at the NASA STI Program welcome the opportunity to meet our international users and plan to hold similar workshops in the future.

If you have suggestions on other ways to improve communication and obtain feedback from the international community, or are interested in planning future international users meetings, please contact, Thomas Lahr, International STI Program, NASA Code JTT, Washington, DC, 20546, (202) 358-1398. ♦

Scientific and Technical Information Ad Hoc Committee To Be Formed in the White House Science Office

At a recent CENDI (Commerce, Energy, NASA, NLM, and Defense Information) meeting attended by Gladys Cotter, Tom Lahr, and John Wilson, Pierre Perrolle of the Office of Science and Technology Policy (OSTP) confirmed the fact that Dr. Allan Bromley, Presidential Science Advisory and Director of OSTP, intends to establish an Ad Hoc Committee under the Federal Coordinating Council for Science, Engineering and Technology (FCCSET) to investigate issues of scientific and technical information. Bonnie Carroll, Secretariat Director of CENDI, notes that, "This decision is an important one for the STI community because it brings recognition to the importance of information in national science policy." Gladys Cotter has been working with CENDI for the past two years to raise important STI issues with OSTP staff.

Dr. Bromley has asked Dr. Robert White, Deputy Under Secretary for Technology Administration of the Department of Commerce, to chair the committee. We anticipate that Mr. Goldin will be asked to appoint a senior NASA official to the group. According to Perrolle, the new committee will be in place soon.

More news of the new committee will be forthcoming in future issues of the *STI Bulletin*. ♦

Coming Soon ... to a telephone near you!

NASA CASI

ACCESS

**YOUR STI PROGRAM
INFORMATION SOURCE**

One phone call will help you:

- Identify documents
- Request documents
- Request registration
- Search online
- Solve systems problems

*Keep your eyes open
for upcoming notices and articles
about CASI ACCESS!*

Houston Hosts NASA STI Program Conference '92

Johnson Space Center (JSC) hosted the 1992 NASA STI Program Annual Conference held April 29 through May 1 in Houston, Texas. Two days of the conference were focused on key issues related to the Conference theme, "A New Information Era." A third day featured a JSC tour and concurrent "workshop" sessions.

Wednesday's sessions began with an update of STI services and the results of the NASA-wide review of the STI Program by HQ personnel, followed by panel discussions conducted by Center representatives. The first panel discussion addressed the mechanics of the chargeback systems now in use at some NASA Centers; the budget, funding transfer, and cost monitoring issues; and customer perspectives. The second panel discussion compared publishing in the NASA Technical Report Series with publishing in Open Literature. It addressed issues such as the perception of NASA report series in the public sector and by peers in the field, and the support and incentives available for publication of STI and R&D results. The Day One sessions concluded with overviews of how STI is handled by the National Technical Information Service (NTIS) and the National Archives and Records Administration (NARA). These were presented by Don Johnson, Acting Director of NTIS and Kent Carter, Director of National Archives, Southwest Section. Evening activities included "NACA Working Group" and "Acquisitions Policy Review" sessions.

Bill Larsen, Chief of JSC's Management Services Division, opened Thursday morning activities with a history of the Center. Next, Paul Weitz, the Center's Deputy Director, welcomed the group to JSC. The guided tour that followed included brief visits to JSC Mission Control and to the Space Shuttle, experiences that affirmed the critical need for research and exchange of STI.

Thursday afternoon, concurrent sessions were offered in three areas: Publications, Libraries, and Graphics and Printing. Each included a roundtable discussion of the session topic. Additional topics included, for Publications, a review of HQ role in publications; for Libraries, reviews of JSC's STI

Center Clearinghouse, HQ's NACA Project and Acquisitions Policy Plan, and JSC's Survey of the 1992 Budget on NASA Libraries. The Graphics and Printing session included an HQ printing audit update, a review of Center-wide printing audit impacts, and a discussion of "Graphic Design in the Computer Age" hosted by M. Wnuk, from the University of Houston, Clear Lake.

One highlight of the Conference occurred after the Thursday night banquet. Joe Loftus, Assistant Director (Plans) for Johnson Space Center, captivated the crowd as he recounted countless worldwide trips aimed at strengthening NASA partnerships and described international efforts aimed at controlling orbital debris and developing interoperability standards for U.S. and foreign spacecraft.

'A New Information Era'

Friday featured, first, short presentations on STI Outreach efforts and updates on center coordination; the new Program Overview publication, "Prelude to the Future;" and the NASA Access Mechanism (NAM). NAM is an X-Windowing system being developed to provide easy access to the NASA STI Database and to members of the S&T community. The NAM is scheduled for beta testing for six months, starting in August; Center personnel are invited to participate. A review of the results of the STI Council Survey and updates on international activities, the CD-ROM prototype, and multimedia efforts followed as the last session of the Conference.

The Conference ended with Gladys Cotter, NASA STI Program Director offering special thanks to Carol Homan, Management Services Division Deputy Division Chief and STI Manager/JSC and her staff for the wonderful job they had done. "This has been a successful Conference in every respect," Cotter said. "I think that's been due in no small part to the tremendous performance turned in by Carol and her staff." ♦

NASA STI Program Visits Russia

During the week of March 2, 1992, a NASA team from the STI Program met with 10 institutes of the Russian Academy of Sciences and related organizations to:

- Discuss STI management
- Learn how Russian STI flows to and from their research and development (R&D) community and how widely it is disseminated
- Evaluate the above results to determine whether to explore the possibility of cooperating in STI programs

The team found the Russians open to exchanging all types of information, including R&D informa-

tion that previously held a classified or limited dissemination status. Information on all public and private sector R&D initiatives appeared to be available. However, there are trade and organizational impediments to free exchange of information and information technology, the most critical being the treatment of intellectual property rights.

At a Round Table Discussion at the end of the week, the Russians received NASA's observations and suggestions positively and provided hard information in both paper and electronic form (some purchased), as well as specific proposals for ongoing dialogue.

The team returned with a significant amount of data, and the promise of more. ♦

Key Personnel Changes

NASA Administrator Daniel S. Goldin

Office of the Administrator

Chief of Staff Darleen Druyun

Asst. Admin. for Procurement Don Bush

Asst. Deputy Administrator Charles Bolden

Executive Officers

Asst. Dir. for Institutional Resources Mgmt, OAST Alison McNally

Deputy Dir. of Advanced Procurement Planning Div.,

Office of Procurement Diedre Lee

Office of Space Flight

Associate Administrator Maj. Gen. Jeremiah Pearson, III

Deputy Assoc. Admin. for Programs Bryan O'Connor

Office of Safety and Mission Quality

Associate Administrator Frederick Gregory

Deputy Assoc. Admin. & Special Asst. to
the Admin. for Long Range Planning Dr. Charles Pellerin, Jr.

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BALTIMORE MD 21240



MOVING?

The NASA Center for AeroSpace Information (CASI) maintains the mailing lists and address file for most of the NASA network. In order to maintain accurate and up-to-date addresses and contact points for each user registered with CASI, please provide any recent or forthcoming changes below and return to:

ATTN: Registration Activity
NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757

CASI ID No.: _____ Phone: _____

Organization: _____

ATTN: _____

Address: _____

Continuing Education

AIAA is sponsoring a series of continuing education courses. In October, the offering includes Fundamentals of Tactical & Strategic Missile Guidance, and in November, Radar Cross Section: The Fundamentals of Stealth. Each session will be held in Washington, DC.

For information about dates and costs of the courses, or about the AIAA continuing education program, call or write to David Owen, 370 L'Enfant Plaza Promenade SW, Washington, DC, 20024-2518, (202) 646-7447. ♦

The *STI BULLETIN* informs NASA STI users about NASA's Scientific and Technical Information Program products and services.

Direct suggestions, material to be considered for inclusion, and comments to Ardeth Taber, NASA Headquarters, Code JTT, Washington, DC, (703) 271-5546.

RECON operational problems may be directed to the RECON Coordinator at:

NASA Center for AeroSpace Information
P.O. Box 8757
Baltimore, MD 21240-0757
(301) 621-0300

Detach label with instructions for address or distribution change and mail to the above address,

ATTN: Registration Services

STI BULLETIN

Vol. 22, No. 2
Jul - Sep 1992

A Quarterly Publication of the NASA Scientific and Technical Information Program

NASA STI Database Upgrade Launched

Contributed by Michael Genuardi and Eric Vogel, NASA STI Program

In July 1991, the NASA STI Program initiated a project to upgrade the data in the NASA STI Database to address issues of database quality and to coordinate quality-improvement efforts. The NASA STI Database Upgrade Project Working Group was established to support this effort.

The Working Group first addressed the definition of database quality and identified several guiding principles. It then worked quickly through the STI Program's existing Data Element Dictionary (DED), identifying subgroups of data elements for detailed study. It was agreed that the present effort should focus on data upgrade issues; that is, those affecting current input procedures and possible retroactive correction measures. Issues affecting software capabilities would be identified for subsequent review.

Each data element was examined, DED text was revised where necessary, and specific issues and recommendations were formulated. A group of more general issues and recommendations affecting groups or "families" of related fields were discussed as well, and a general strategy for defining and categor-

izing the database upgrade tasks was developed.

The guiding principles and goals for database quality defined by the Working Group are summarized as follows:

- **Consistency.** The type and scope of data in each field and the format in which the data are entered should be the same for all input producers and from year to year. If it is no longer possible to make past data consistent, differences should be noted in the user documentation.

- **Granularity.** Each specific piece of information should be stored in a separate field to facilitate access for searching. Display formats combining different fields should be just that—display formats created by the system software—and not large amorphous fields in the database itself.

- **Accessibility (search and display).** The number of fields that can be searched should be expanded to meet user needs, and text-based searching should be made available whenever possible.

- **Simplification of input.** Data element content and format should not be restricted by the limitations of input processing or

publication production software.

- **Selecting the right kinds of data.** The fields of the database and its retrieval software should meet the information needs of our customers: the users of RECON, the Aerospace Database, and other

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**STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION**

NASA Committee Endorses Importance of the STI Program to NASA and the Aerospace Community

*Contributed by Lou Ann Scanlan
NASA STI Program*

Last fall, the Associate Deputy Administrator, Samuel Keller, requested the formation of a committee to review and evaluate the agency's management of scientific and technical information activities. Robert Rosen, Deputy Associate Administrator, Office of Aeronautics and Space Technology, was appointed to chair this committee.

Known as the Scientific and Technical Information Activities Committee, it published a charter that "the committee will review

Langley Research Center (LaRC); Stuart Fordyce, Lewis Research Center (LeRC); Wayne Littles, Marshall Space Flight Center (MSFC); Elmer Brooks (ex-officio); and Susan Fruchter, Office of Aeronautics, Exploration, and Technology (OAET).

The committee was asked to reexamine both the premises and processes under which NASA has operated since the system was established 25 years ago. They were particularly interested in reviewing NASA's current capabilities and requirements and whether NASA was meeting those requirements in the most cost-effective manner.

presented, and Mel Day, one of the pioneers of NASA's STI Program, discussed the state of the art for STI dissemination.

The committee determined that the commercial databases are dependent on information furnished by the NASA STI activity. Additionally, the estimate of replacement costs using a commercial alternative demonstrated that the commercial alternative was more expensive than the current STI Program budget and actually the replacement costs would be much higher since the STI Program also provides the source data to the commercial vendors. If that source data were not available one would have to pay to create it. The committee also determined that *Scientific and Technical Aerospace Reports (STAR)* and *International Aerospace Abstracts (IAA)* are unique; that NASA RECON is the most cost-effective, currently available retrieval and dissemination system for NASA; and that NASA's STI activity has

(continued on page 3)

...the STI Program Director, Ms. Cotter, and her team are doing an excellent job...

and evaluate the operations and services of the scientific and technical information (STI) activities in light of agency requirements, cost considerations, availability of comparable services externally, and overall agency funding constraints. Robert Rosen then carefully selected the committee membership to ensure NASA-wide representation."

Committee members were Joe Alexander, Office of Space Science and Applications (OSSA); Tom Utsman, Office of Space Flight (OSF); Peter Burr, Goddard Space Flight Center (GSFC); Paul Holloway,

Several meetings were held and various individuals and organizations were invited to provide briefings to the committee. Kurt Molholm, Defense Technical Information Center (DTIC) Administrator, provided an overview of his program as a comparable government program. Fred Wood, Office of Technology Assessment (OTA) Senior Associate, presented a 1990 OTA study entitled "Helping America Compete: The Role of Federal Scientific & Technical Information." Commercial alternatives for STI retrieval and dissemination services were

The **STI BULLETIN**, a quarterly publication, informs NASA STI users about the NASA Scientific and Technical Information Program products, services, and news.

Send suggestions and/or material to be considered for inclusion to:
STI Bulletin Coordinator
NASA Headquarters, Code JTT
Washington, DC 20546
(703) 271-5546.

DATABASE UPGRADE

(continued from page 1)

products of the NASA STI Program and its partners. Fields no longer used should be eliminated; new fields should be introduced when necessary.

Results of these quality improvement measures now available to RECON users include the following:

- **Current NASA Thesaurus** terms were added to over 400,000 records that were entered in the STI Database before 1968. These records comprise File Collection G, the alternate files. Retrieval in these files now is easier because the searcher can use a common subject vocabulary.

- **The Research and Technology Objectives and Plans (RTOP) and International Standard Serial Number (ISSN) numbers** became available for searching and display, providing additional means of access to citation data.

- **The Unclassified Foreign Title field** is now displayable.

RECON Alerts, a new printed announcement tool, will be used along with online announcements on the RECON system to notify of STI Database upgrades and other system changes. *RECON Alerts* is being sent to all active RECON users; it supplements existing RECON documentation.

Questions or comments on the Database Upgrade Project may be directed to the STI Program's Database Creation Section at (301) 621-0390. ♦

NASA COMMITTEE ENDORSES IMPORTANCE OF STI PROGRAM

(continued from page 2)

great value to NASA, universities, industry, and other government agencies.

However, the committee found that improvements in services are desired. They found that the physical plant and equipment of the NASA Center for AeroSpace Information (CASI) are grossly obsolete and that the NASA STI Database will soon be incompatible with other complementary databases, but that current budget levels do not permit required modernization.

Additional findings and recommendations are provided below:

- The committee recommends that the agency continue to fund the STI Program at the current levels as a minimum. A healthy program would require the current level of funding for operations with a modest capital investment for augmentation.

- The STI Program should be directed to develop and implement a multiyear capital investment plan that will (a) modernize computer systems and (b) transition to optical digital image (ODI) technology. Additionally, the agency should provide the funds for the plan.

- The agency should secure a suitable facility in a competitive manner.

- Productive changes have been made by recent STI management; NASA senior management should provide strong

support to the STI Program and its management.

- Civil service staffing is low and slots should be found and given to the activity.

- Significant changes have taken place in the international arena that affect the information exchange arrangements with foreign agencies. The STI Program has to look carefully at ensuring international technology transfer parity.

The committee's overall recommendation was that the agency should continue to fund the program at its current level (adjusted for inflation) for operations and provide a separate line item for modernization funding.

Last April, these findings and recommendations were released to the NASA STI Program. On May 6, 1992, Dr. Rosen presented the committee's findings to the STI Council where he stated that "the study justified the current levels of budget and provides justification for NASA senior management to invest more money." He added that "the committee members were supportive and indicated that they would be willing to take small amounts of their center or program office budgets to fund modernization of this program." Finally, they felt that "the STI Program Director, Ms. Cotter, and her team were doing an excellent job and that management ought to support that with funding." ♦

CENTER NEWS

TQM At NASA...

Contributed by
Bill Schubert
Ames Research Center

There are different schools of Total Quality Management (TQM). Several innovators in management theory came up with the ideas that are now known and used under the name TQM. Among the several "management guns" are Robert Costello, Joseph M. Juran, W. Edwards Deming, and Philip Crosby. It is said that Japanese industry's adoption of Deming's ideas after World War II is responsible for Japan's competitive edge in the contemporary world marketplace.

A common idea of all these innovators was that the quality of the process is what should be controlled, not the quality of the product. If one has a quality process then a quality product will naturally follow. Since the 1980s, the "Quality First" movement has been sweeping the business environment of America. In the 1990s it looks to replace the currently dominant methods that were founded on the traditional "scientific management" theories of Frederick Winslow Taylor and others.

NASA's program of TQM is based on Philip Crosby's ideas. After years as a vice president at International Telephone and

Telegraph (ITT), Crosby wrote influential books such as *Quality is Free* and *Quality Without Tears*. Like the other thinkers whose technology now makes up the content of today's quality movement, Crosby has an integrated approach; i.e., there are many different components included in the model of a quality environment.

In Florida, Crosby began his Philip Crosby Associates and Quality College to teach managers the precepts of his management philosophy. Among these ideas was a redefinition of the word "quality." For Crosby, quality does not mean the same thing as it meant in the hierarchical structure of the old management style. Quality was goodness or excellence in the old model. Crosby's notion of quality is conformance to requirements. What are these requirements? As members of the organization we all are meant to identify them. The requirements are something that we discover together, and we keep on discovering and improving these requirements. So there is a kind of built-in freedom and creativity in his definition.

This definition also allows for the responsibility for this discovery to be spread throughout the ranks of the organization, not just at the top. But even though the notion is to spread the

contribution of ideas throughout the organization, this does not mean that Crosby does not hold managers responsible for the success or failure of their organizations. He considers that 80 percent of a company's problems are caused by the management and only about 20 percent by the workers.

According to Crosby, a management organization must achieve a certain level of maturity or wisdom to employ the new quality concept and get results. The organization must find its level on Crosby's management Maturity Grid. There are five stages of management maturity: (1) Uncertainty, (2) Awakening, (3) Enlightenment, (4) Wisdom, and (5) Certainty. Interestingly, the language is that of Eastern religious philosophy. Perhaps that is why Crosby and his colleagues are called "gurus." The religious echoes in the language are probably there because a whole new attitude is required to make the TQM concept work.

His system also includes a central 14-step program that is to be followed in implementing TQM. It begins with Management Commitment as the first step. Crosby emphasizes that a quality-oriented environment is management-driven and management must be behind it 100 percent for it to work. ♦

More TQM At NASA...

*Contributed by
Goddard Space Flight Center*

Total Quality Management (TQM), its goals and principles, has recently received considerable attention at Goddard Space Flight Center and in the surrounding communities. Through the efforts of the Technical Information Services Branch (TISB), STI support personnel successfully coordinated two Goddard-sponsored TQM symposia this fiscal year.

In early November 1991, some 500 civil service employees and contractors attended the 8th Annual NASA/Contractors Conference on Quality and Productivity. The symposium, "Building a Total Quality Community," presented the views of local business and civic community leaders as well as Goddard scientists and administrators to illustrate the partnership being forged between these communities and Goddard.

Dwaine Kronser, Head of TISB, managed the logistics of the symposium, participating in the organizing committee activities, assisting in the arrangements with Turf Valley Country Club in Ellicott City, Maryland, and orchestrating the TISB support. The conference support staff provided audiovisual support, which included slide and overhead projectors, tape recorders, and sound equipment. The Publications and Graphics Services

Section staff wrote and edited a proceedings document. The Graphics staff designed the folders given to attendees and the awards presented to key speakers and committee members. The Photographic and Reproduction Services Section duplicated announcements, calendars, and schedules, and printed the formal conference proceedings booklet. A staff photographer was assigned to document symposium activities.

...reflecting the spirit of STI services.

On April 22, 1992, Goddard sponsored a second event, the Continuous Improvement Symposium, attracting approximately 275 civil service employees and contractors dedicated to promoting the principles of TQM. This conference, "Building a Continuous Improvement Team: Goddard and Contractors," consisted of a morning session with opening remarks by John M. Klineberg, Director of Goddard Space Flight Center, followed by four simultaneous breakout sessions. In the breakout sessions, panel members from public and private sectors presented their experiences with continuous improvement issues and provided an opportunity for open discussion with attendees.

Susan Hart, Head of the Publications and Graphics Services Section, represented the TISB in the preliminary planning sessions for the conference and was responsible for committing

STI resources to its support. Conference support staff provided logistical support. The Graphics staff designed information packets and cover pages for handouts, while the Publications staff compiled the panel members' handout material for each of the four sessions. Graphics personnel also designed directional signs, maps, and the awards presented to key speakers and committee members. The Duplicating Support staff reproduced and collated the 4 sets of handouts for the 275 attendees; they also printed and applied 275 sets of folder labels to the handout folders. Two photographers from TISB covered the morning opening session activities.

These two conferences embody the Goddard efforts to forge closer government/contractor/community relations and to communicate the principles of Quality Management. These principles are essential to providing a quality work environment for the scientific and technical personnel at Goddard.

The TISB met the challenge of coordinating its STI resources in support of these two events. Goddard STI support personnel proved that their quality, behind-the-scenes, support activities underscore their abilities to coordinate the dissemination of information effectively. The success of these two events is due in large part to the TISB staff support, reflecting the spirit of STI services. ♦

MORE CENTER NEWS AT YOUR LOCAL LIBRARY...

Electronic Library Expo

Contributed by
Goddard Space Flight Center

The GSFC Library hosted an "Electronic Library Expo" during the week of April 27-May 1, 1992, with library staff demonstrating access to electronic databases for a different discipline each day. Disciplines included Astronomy and Astrophysics, Engineering, Earth Sciences, and Computing.

On Friday, May 1, the library arranged for a Scientific Colloquium on "Contemporary and Future Scientific Publication and Data Distribution" given by Helmut Abt, editor of the *Astrophysical Journal*. Following the colloquium, a reception was held in the library. ♦

GSFC Poster Session

The GSFC Library presented a "Poster Session" on its pioneering use of a hand-held scanner to track usage of noncirculating journals at the annual meeting of the American Library Association in San Francisco, which attracted more than 20,000 attendees.

Barcodes, which have been placed on the volumes by library staff, are scanned with the portable scanner each time a journal is reshelved. The data

then are fed into the library's circulation desk terminal at the end of each day and are retained in NASA's ARIN (Aerospace Research Information Network) system for later extraction and analysis. These data are used to improve the process for deciding which journals to move offsite and which journals become candidates for elimination as budgets grow tighter. The library obtained custom programming to support scanner interface with the library's NOTIS Library Management System software.

The Poster Session held on June 28 generated a great deal of interest. Several attendees suggested that it be developed into a paper for publication in a professional library journal. ♦

STI Bulletin Schedule

We welcome your input to the *STI Bulletin*, which may include topics encompassing new or upcoming STI-related products, services, or news. It can be submitted in the form of text (hardcopy or ASCII file), graphics, or calendar items to:

Ardeth Taber
STI Bulletin Coordinator
NASA Headquarters, Code JTT
Washington, DC 20546-0001
Phone: 703-271-5546
FAX: 703-271-5665
Internet: ataber@sti.nasa.gov

The copy deadline for the Oct-Dec 1992 issue is November 9, 1992. ♦

Key Personnel Changes

RETIRED

Jet Propulsion Laboratory
Technical Librarian Specialist,
Library Acquisition Group Joan Swan

NEW

NASA STI Program
Contracting Officer's
Technical Representative (COTR) CASI Terese Ohnsorg, 202-358-1385
Manager, CASI STI Services Division James Schroer, 301-621-0154
Manager, CASI Publications/Editorial Support Mark Jeschke, 301-621-0318

NEW TITLE

NASA STI Program
Chief, STI Information Services Section James Erwin, 202-358-1391

Wide Area Information Servers

A dynabase is "a dynamic database containing the notes, sketches, papers, and other documents [a person] creates and gathers over a long period of time" (Larry Press, "Collective Databases," in *Communications of the ACM* 35(6):26-32, June 1992). A collective dynabase is a dynabase for a group such as a department or an entire corporation.

To retrieve information from such a vast database, sophisticated techniques need to be considered for development. For example, will users need to add keywords? Or can the system be made to analyze a document or its context and generate the keywords intelligently? One project concerning collective dynabases involves the use of wide area information servers (WAIS).

WAIS are highly parallel Supercomputers (such as Connection Machines from Thinking Machines) that enable users of collective dynabases to perform free-text searches of these dynabases.

There are already some 190 WAIS on Internet, with topics ranging from poetry to television programs. Public domain software is available for IBM PCs, Macs, NeXTs, and other computers and operating systems. The NISO 239.50 protocol, developed for library catalog queries, has been extended to standardize WAIS queries and replies so that any server can access any client dynabase.

A WAIS search proceeds in two phases: a keyword search, and then a search for documents similar to the most relevant one from the keyword search.

For example, WAIS can be used to support activities like automatic daily searches of the *Wall Street Journal*. It also supports bit maps and sound files.

Commercial Applications of WAIS

Lotus has developed a LAN-based conferencing system called Notes. Notes has a graphical user interface; its databases contain documents with many formats, from numerical records to rich (formatted) text. Organizations with multiple sites can also use Notes, even though their LANs are connected to each other only intermittently. At connect times, the Notes servers at each remote sites would be connected and would exchange data, leaving a full set of data at each location.

Plans

Successful WAIS will need interfaces to OCR systems, portable computers, pens, fax machines, telephones, and wide-area networks. Standards for messaging interfaces must be developed further, although they may be a while in coming—the standard telephone system in this country took 50 years to develop. Eventually, however, communications servers will be common element of operating systems.

While we are waiting, we can use Electronic Data

Interchange (EDI) for intercompany communications. In the future, the same infrastructure will support interorganizational dynabases. ♦

New Thesaurus Terms

These new terms are currently available on NASA RECON. Your suggestions for additional new terms are welcome; just call ACCESS, the STI Program Help Desk, at (301) 621-0390.

CHOKED FLOW
DEBONDING (MATERIALS)
DIETHYL COMPOUNDS
DIMETHYL COMPOUNDS
GINGA SATELLITE
INDUCED DRAG
INTERLAMINAR STRESS
MID-OCEAN RIDGES
MID-OCEANIC RIDGES
 Use MID-OCEAN RIDGES
OCEAN FLOOR SPREADING
 Use SEA FLOOR SPREADING
REED-SOLOMON CODES
RS CODES
 Use REED-SOLOMON CODES
SEA FLOOR SPREADING
SHAPE FUNCTIONS
SOLAR CONVECTION
 (ASTRONOMY)
STELLAR CONVECTION
STRONTIUM OXIDES
TENMA SATELLITE
TRANSVERSE LOADS
UPWIND SCHEMES
 (MATHEMATICS)



Gathering Japanese STI in Aviation and Aerospace

Contributed by Glenn P. Hoetker
NASA STI Program

Japanese scientific and technical information (STI) has received considerable attention in government and industry in the last few years. The National Technical Information Service and the Japan Information Center for Science and Technology recently cosponsored their Second Annual Joint Conference on Japanese Scientific and Technical Information. Similar conferences have been held in Berlin, Germany; Warwick, UK; and Nancy, France. In addition, several recent books have covered the problems of access to Japanese STI.

The interest in Japanese STI is not surprising given Japan's long-standing strength in applied technology and growing strength in basic science. In aviation and aerospace STI, Japan has world-class research in important fields such as material science, microelectronics, and the development of new applications such as hypersonic travel.

There are special difficulties involved in gathering Japanese STI. This article addresses four such difficulties.

Language

One difficulty is language. Few U.S. researchers read Japanese and the extreme shortage of qualified Japanese-to-English

technical translators makes translating Japanese articles expensive and time-consuming.

This same barrier makes it difficult even to identify useful Japanese materials. Because of translation costs, few databases cover Japanese materials in as timely or comprehensive a fashion as they do materials in English or European languages. Thus, it is difficult even to find the right documents to translate.

English language reporting of Japanese R&D is helpful in pointing out important topics. However, there is often a loss of clarity, timeliness, and detail. English language reporting, therefore, is at best a partial substitute for access to the original Japanese language material.

The Human Network

The flow of information through the "invisible college" of human contacts is a vital part of scientific communication in Japan, even more so than in other countries. Because of language and cultural difficulties, few Americans are part of this network. Moreover, few Americans have spent sufficient time in Japan to make the necessary connections to take advantage of this information flow. It should be noted however that this problem, while severe, is often over-

stated. Access to published materials can provide much more complete information than is commonly realized.

Information Scatter

Most researchers are familiar with the difficulties caused by information being scattered through a large body of publications. In the case of Japan, information scatter is even more of a problem. There are few refereed journals. As a result, most Japanese researchers will publish in their university, society, or company publications, making it much harder to identify a core group of journals for a specific research field.

This scatter extends into databases, of which Japan has many. There is no Japanese equivalent to DIALOG or Orbit, systems that offer access to a large number of databases across a range of subjects. Database producers tend to be database vendors. Therefore, a researcher must identify each command language for each. While more databases are becoming available through international telecommunications networks, different arrangements may be necessary to connect to each database. In addition to the administrative costs involved, there may be minimum monthly fees for each

(continued on page 13)

AEROSPACE AND DEFENSE TERMINOLOGY DATABASES

A large number of terminology databases exist or are being developed within military, industrial, and academic organizations in NATO countries. The cost of creating and maintaining them is often high; cooperation in compiling or sharing such databases may be to everyone's mutual advantage.

To encourage the exchange of terminology among the NATO countries, the Technical Information Panel (TIP) of the NATO Advisory Group for Aerospace Research and Development (AGARD) is attempting to compile a directory of existent Terminology Databases serving the aerospace and defense community. The proposed AGARD directory is intended to make these databases known so that cooperative agreements and arrangements for their use and updating could be set up directly between interested parties.

If you wish to contribute to this project, please complete the form below for each database you want to include. A second questionnaire has been included for your convenience. Then tear out this page, fold it over with attachments, staple or tape closed and drop it in the mail. Questions can be directed to Walter R. Blados, NASA STI Program, Code JTT, Washington, DC 20546; phone, (703) 271-5634; fax, (703) 271-5665. To be eligible for inclusion, your terminology database(s) should be:

- Related to aerospace or defense
- Unclassified
- Accessible to users outside your organization under terms and conditions you would negotiate
- Properly substantiated, with sources and references.

AGARD will publish the directory provided there is sufficient input. In any case, respondents will be kept informed. Respondents reporting a database on the enclosed form will receive a free copy of the directory.

QUESTIONNAIRE OF AEROSPACE AND DEFENSE TERMINOLOGY DATABASES

1. Organization _____
2. Address & point of contact _____

3. Title of database _____
4. Languages involved _____
5. Type of medium (CD-ROM, PC, paper, online, magnetic type, etc.) _____
6. Content (definitions, translations, contexts, sources) _____
7. Format of data (and software used, where applicable) _____
8. What subject classification system used, if any (STAR, COSATI, etc.) _____
9. Size of database (number of entries) _____
10. Subject areas covered _____
11. Comments on possible cooperation (optional) _____
12. Please attach a sample of the data.

**Questionnaire of Aerospace and
Defense Terminology Databases**

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WALTER R. BLADOS

NASA STI PROGRAM

CODE JTT

WASHINGTON, DC 20546

JAPANESE STI

(continued from page 8)

database. In sum, access to a range of Japanese databases is much more time-consuming and costly than in the United States.

Document Acquisition

Once a relevant item has been identified, it may still be very difficult to obtain. Holdings of Japanese journals and reports in American libraries are sparse, and few American librarians are familiar with alternative sources of Japanese documents. Until this is rectified, it will be difficult to obtain even fairly common publications.

Certain publications are difficult even for Japanese to obtain. Conference proceedings or preprints often have only one very small printing, and it can be nearly impossible to obtain copies unless one attends the conference. Because of the lack of large scientific publishers, many documents are published by learned societies, which often have small print runs and limited distribution systems. Technical reports are also extremely hard to acquire outside of the organization that originated them.

Conclusion

Because of differences in language and culture, many Western researchers find it difficult to obtain the most timely, advanced STI from Japan. Increasing the flow of information will take technical steps, such as databases and machine translation, and human measures, such as language skills and international exchanges. ♦

Part Two of this article will examine steps NASA is taking to make Japanese aviation and aerospace STI more accessible to researchers around the world.

AGARD TIP Specialists Meeting

*Contributed by Walt Blados
NASA STI Program*

The NATO Advisory Group for Aerospace Research and Development (AGARD) will hold its specialists meeting in Ottawa, Canada, October 6-7, 1993. The title of the meeting is "International High Speed Networks for Scientific and Technical Information."

Wide area electronic networks have been developing rapidly in recent years, and are being interlinked to form an international network. Information centers will have a tremendous opportunity to make use of these networks for the dissemination of STI in aerospace, defense, and other fields. On the other hand, these networks also give rise to many new concerns and issues.

This Specialists Meeting of participants from NATO countries will review the current situation; assess future possibilities; and examine issues such as standards, security, management, property rights, and copyright from the point of view of the end user, the information provider, and the network manager.

Session I will be an overview of global information networks; what they are and how they work and what the STI manager needs to know, including protocols, standards, and applications.

Session II will treat the management of such networks, including standards and regulatory issues (security, integrity of files, intellectual property rights, along with a discussion of the virtual library, the difficulty of navigating through multiple networks, and the need for directories). This session will also discuss possible changes in existing libraries and information centers.

Session III will include applications and case studies. It will include discussions on document delivery such as high-volume scanning and transmission of library documents internationally; the treatment of electronic journals, bulletin boards, electronic mail, and conferencing; and the handling of multimedia information.

Session IV will conclude with a vision of the future...the incorporation of wide area information servers to find and retrieve information on networks.

This will be a pivotal meeting, and will discuss far-reaching implications on the way we will be doing business in the future. We recommend that you budget and plan to attend this international gathering on a most provocative issue. ♦

STI Program in Action



Contributed by Ron Sepic, NASA STI Program

This is the second in a series of case studies that show the STI Program in action and illustrate the relationship between STI and R&D.

Searching the Heavens with Your PC

At the National Space Science Data Center (NSSDC), the day is fast approaching when astrophysicists will be able to search three leading professional journals from their PCs, retrieve the relevant articles, and then print out a hard copy of those articles, on command.

And the STI Program will have played a key role in pioneering the advanced technologies that make it all possible.

It's part of the NSSDC's Study of Electronic Literature for Astronomical Research (STELAR) experiment, an electronic literature experiment funded by Code SMI at NASA Headquarters.

The idea originated several months ago in conversations between senior-level managers from each organization. The more they explored the basic concept, the more each liked it.

The union of NSSDC's and the STI Program's talents is not surprising, since each stores and offers information that helps the NASA research community.

The NSSDC, established in 1967, serves as a long-term

archive and distribution center for data obtained on NASA space flight investigations. It also provides a variety of services to enhance the overall scientific return from these missions.

STELAR could make the NSSDC's services more valuable than ever. As part of the experiment, the NSSDC is bringing online the digital images from the last five years of the *Astrophysical Journal*, the *Astronomical Journal*, and the *Publication of the Astronomical Society of the Pacific*.

That's where the STI Program comes in. Access to these articles will be provided through the use of machine-readable bibliographic records we're supplying. By using more advanced search and retrieval software and user interfaces, users will be able to search, retrieve, and print any article of interest.

The societies that own the copyrights on the journal articles, the American Astronomical Society and the Astronomical Society of the Pacific, are also taking a leadership role in this project as members of the STELAR Planning Committee.

In addition, members of the publishing community, librarians, astrophysicists, data archivists, and, now, members of the STI Program are participating in a series of NSSDC-sponsored workshops to address issues related to the STELAR experiment. ♦

STI Program Now Accepting VISA and MasterCard Payments

The NASA Center for Aerospace Information (CASI) now accepts VISA and MasterCard charge cards for all document orders and other services. The new charge service became effective September 1, 1992, and allows for faster, more convenient document order service.

Nonregistered users now have the option of charging their orders and receiving the document more quickly. Registered users may also elect to charge documents in lieu of monthly invoicing.

For further information on charge card payment or to charge document orders, please call (301) 621-0390 between 8:00 a.m. and 8:00 p.m., e.s.t.

World Space Congress

*Contributed by Karen Holloway
NASA STI Program*

The World Space Congress was held in Washington, DC, August 28-September 5, 1992. It was co-sponsored by the Committee on Space Research (COSPAR), the International Astronautical Federation (IAF), the American Institute of Aeronautics and Astronautics (AIAA), the National Academy of Sciences, and NASA. This historic Congress, held in celebration of the International Space Year, provided a forum for more than 3,000 papers on topics ranging from the law of outer space to the search for extraterrestrial intelligence.

In preparation for the Congress, the STI Program prepared 237 NASA speaker bibliographies and 12 subject bibliographies to distribute to attendees. NASA speakers were consulted several months before the Congress to verify their citations from the STI Database. The overwhelming number of responses from the NASA authors has enabled the STI Program to add to the wealth of the STI Database and make research results more accessible to the STI community. As one scientist responding to the request said, "The STI bibliographies will provide a unique database of information for the world's scientists, but particularly for the scientists from the

developing world. Too often we forget that the value and importance of our research is strongly dependent on its dissemination to the world."

The subject bibliographies were compiled on the topics listed below. Limited numbers are available for distribution; call ACCESS, the STI Program's Help Desk, at (301) 621-0390 for information.

- Asteroid Mission and Capture Scenarios
- Computer-Aided Design of Spacecraft
- Crew Safety and Rescue in Space
- Data Management
- Human Exploration of Mars
- Human Factors Engineering
- Magellan Results
- New Technologies for Remote Sensors
- Non-Terrestrial Planetary Magnetospheres
- Space Nuclear Propulsion
- Spaceborne Closed Ecological Systems (CELSS)
- Spaceborne Photography. ♦

Book Reviews

Reviews are provided courtesy of the Special Library Association's Sci-Tech News. Unless otherwise noted, reviews are by NASA STI Program staff.

Dictionary of Space Technology

Edited by Mark Williamson.
New York: Adam Hilger, 1990.
401 pp. \$50.00.
ISBN 0-85274-339-4.

The specialized terminology, abbreviations, and acronyms developed to explain space parameters are presented in a manner which is a compromise between an encyclopedia and a dictionary. The major entries are classified under twelve headings: space technology, communications, propulsion, launch vehicles, manned spaceflight, the space shuttle, space centers and organizations, orbits, propellants, materials, physics and astronomy, and miscellaneous.

A special index identifies each subject with respect to the major heading under which it is listed. The definitions are clear and concise and also contain appropriate cross-references to related subjects. The significant parameters of each definition are shown in heavy print for easier location. The logical arrangement, the easily understood text, and the use of photographs and sketches make this book a valuable reference for readers with many levels of interest in space. ♦

PEOPLE IN THE NEWS...

SLA Committee Chairs from HQ

Two STI Program Office staff have been appointed to head committees for the Washington, DC Chapter of the Special Libraries Association (SLA) for 1992-93.

Karen Holloway will chair the Public Relations Committee, which will be developing an outreach program to elementary and secondary students to promote an understanding of the work of information professionals. Ms. Holloway will also write a series of columns in the chapter newsletter on promoting information services within organizations.

Karen has been active in SLA for a number of years, having been vice-chair of the 1991 Annual Conference, president of the Georgia Chapter, and chair of the Engineering Division. She currently serves as part of the STI Program's User Services Group.

Glenn Hoetker, International STI Program Analyst, has been appointed Chair of the International Relations Committee. The committee's mission is to increase awareness of international issues in the information community. The committee's goals relate directly to Mr. Hoetker's daily work with NASA's partners in international

information exchange, and build on his previous position as Japanese Information Specialist for SCAN C2C. Mr. Hoetker also serves on the International Relations Committee of the American Society for Information Science (ASIS). He researched the effects of information technology in the Pacific Rim as a Fellow of the Thomas J. Watson Foundation. ♦

JPL Honors

Fred I. Kozuwa, a member of the Documentation Section, Technical Documentation and Materiel Division at the Jet Propulsion Laboratory (JPL) and Documentation Representative to the Ulysses Project, was honored at a recent NASA Honor Award ceremony held at JPL. He was one of the honorees to receive a Group Achievement Award on behalf of the Ulysses Support Team. Mr. Kozuwa has been Documentation Representative to the Ulysses Project for 9 years, and has been a JPL employee for 18 years.

Mary Fran Buehler, Supervisor in the Documentation Section, Technical Documentation and Materiel Division, recently gave two presentations to the San Gabriel, California, Chapter of the Society for Technical Communication. One presentation, titled "Axioms

From the Ancients," traced the history of technical communication from the Greek philosophers to the modern period. The other presentation dealt with the basic principles of developing questionnaire items.

Justine D. Weiher, Administrative Group Supervisor at the Jet Propulsion Laboratory (JPL) has been awarded a Certificate of Appreciation "in appreciation for conscientious reviewing of JPL documents to ensure that they reflect the interests of the Lab."

Since the Viking Project years, Ms. Weiher has been working with JPL authors. She combines the qualities of a diplomat in suggesting some changes in wording with the scientific knowledge to judge the materials. The review process also interfaces with the Office of Technology Utilization and the Patent Office. Over the years, Ms. Weiher has developed a close working relationship with these groups. Often working on tight schedules to clear papers for a symposium, she and her Document Review Group always meet the deadline.

The last few years have brought an increased awareness of the restrictions under the International Traffic in Arms Regulations (ITAR) and the Export Administration Regula-

(continued on next page)

PEOPLE IN THE NEWS

(continued from previous page)

tions (EAR). Ms. Weiher has become as knowledgeable in these areas as anyone at JPL, and has written an information brochure for JPL authors. She has also kept informed on the new information technology and electronic databases.

For her sincere efforts to project a positive image of JPL through its publications, Ms. Weiher is worthy of this award.

Joan M. Swan, Technical Librarian Specialist in the Library Acquisition Group at JPL, received a Certificate of Appreciation for her 38 years acquiring technical information to support JPL projects.

Ms. Swan started her career in 1953 during the Army days of the WAC and Corporal missiles. With JPL's transfer to NASA, she has been a part of all the projects from Explorer to Galileo. During these years, she has seen the acquisition of library books, documents, and journals develop into a highly complex activity. In the "good old days" a call to a local book store and just ship and bill were often all it took to support the needs of a member of the technical staff. Now there are competitive bid contracts to evaluate, computer applications, online ordering, and a host of new requirements. All of these Ms. Swan has learned, adapted to, and with her years of experience has been able to implement with effective results.

She has also developed the instincts of a good detective in tracking down some requests. A recent example started in June 1990 with the first contact for a document to the Livermore Lab. From then until August 1991, Ms. Swan followed the trail from Livermore to Fort Hauchuca to Naval Air Systems (NAS). After she convinced NAS that JPL was a friendly power, the document was received in September.

For this kind of effort as well as the routine acquisitions of library materials for all these years, performed with unfailing good humor to the most demanding patron, Ms. Swan deserves this certificate.

Ms. Swan retired from JPL on August 7, 1992, after 39 years of service. ♦

LaRC Service Medals

Andrew J. Hansbrough, Chief, Research Information and Applications Division at the NASA Langley Research Center, was recently awarded the NASA Exceptional Service Medal. The award was based on Mr. Hansbrough's exceptional contribution in effecting significant increases in the productivity of scientific and technical information support to LaRC's mission.

Frederick D. Jones, Photographer (Scientific and Technical) at Langley was also awarded the Exceptional Service Medal for providing exceptional photographic services in his

position. Mr. Jones has worked on many of the major research programs and projects at the Center, including Mercury, Gemini, Skylab, FILE, Light Aircraft Crash Test Program, and Long Duration Exposure Facility (LDEF). ♦

Lewis Takes Its Place In History

Publicizing the history of Lewis Research Center during its 50th Anniversary celebration in 1991 required digging through hundreds of publications and photographs scattered throughout the center. Sharing the Lewis story during its 100th Anniversary, though, should be a much easier task.

In February 1991, Sheree Sievert, a technical editor/writer in the Editorial Branch, Technical Information Services Division, was named history coordinator of Lewis, and a Lewis History Office was established.

As history coordinator, Ms. Sievert is working to pull together a comprehensive historical collection of books, records, and articles in one central location. She also serves as liaison with the History Office at NASA Headquarters and helps outside researchers find information about Lewis.

Since 1991, Ms. Sievert has researched and written a number of commemorative publications and articles for the Lewis News, written a presentation for

(continued on page 18)

MORE PEOPLE IN THE NEWS...

1992 Mandel Award

Phyllis Fischer, Manager of Libraries at McDonnell Douglas Corporation, received the second annual George Mandel Memorial Award at the Conference of the Special Libraries Association (SLA) held in San Francisco, June 8-12.

The award is named for the long-time chief of the Technical Information Center of the NASA Lewis Research Center, who was an active participant in the library profession for 30 years. The purpose of the award is to perpetuate his enthusiasm for the Aerospace Division of SLA, and his belief in the importance of participation in professional organizations.

The \$500 award provides financial support for SLA conference attendance. To qualify, a person must present a paper, chair or coordinate a program, and participate in a panel or as a roundtable leader at an Aerospace Division program.

Ms. Fischer is past Chair of the Aerospace Division. She was division program planner and moderated a session on human factors information at the 1991 SLA conference. She also moderated a session on materials properties data online at the 1992 SLA conference. ♦

Elizabeth Buffum Wins Award

In June, Elizabeth V. Buffum, Director of DOE's Office of Scientific and Technical Information (OSTI) received the Interagency Committee on Information Resource Management Award for Management-Administrative Excellence. The General Services Administration sponsors this award.

Ms. Buffum has been with OSTI since 1979, serving in a variety of management positions including Associate Director in charge of the OSTI liaison office in Washington and Deputy Director of the main OSTI office in Oak Ridge, Tennessee.

The Interagency Committee on IRM recognized Ms. Buffum for her "outstanding achievement in information management policy and planning" as well as her "leadership and contributions in institutionalizing [IRM] within the Federal Government."

OSTI, which employs approximately 150 federal workers in Oak Ridge, is part of the DOE Headquarters Office of Administration and Human Resource Management in Washington, DC. ♦

LEWIS TAKES ITS PLACE IN HISTORY

(continued from page 17)

Director Larry Ross on the history of Lewis for the AIAA/ NASA/OAI Conference on Advanced SEI Technologies, and prepared a section on historical resources at Lewis for the NASA publication, *Research in NASA History, A Guide to the NASA History Program*. This marks the first time Lewis has been included in the guide.

Since its inception, the Lewis History Office has received information requests from NASA Headquarters, the Environmental Protection Agency, and the Smithsonian Air & Space Museum, as well as numerous requests from within Lewis. Ms. Sievert has been busy organizing records and is working to set up a historical computerized database to help locate materials easily.

Most recently, in July 1992, Ms. Sievert was appointed to the Heartland Science Steering Committee, which will oversee a project conceived by The Ohio Academy of Science to produce a high-quality, authoritative book about Ohio's contributions to science, engineering, and technology. Lewis Research Center was among the first group of sites selected for recognition under the project. The book is scheduled to be completed in 1995. ♦

OMB Proposes Revision to Circular A-130, Management of Federal Information Resources

*Contributed by Phil Thibideau
NASA STI Program*

The Office of Management and Budget (OMB) proposed revisions to its 1985 Circular on "Management of Federal Information Policies," circulated at the end of April 1992, are intended to focus on the following five key areas:

1. IRM planning, with special focus on the information life cycle
2. The role of State/local governments in the management of IRM resources and information, and the need for Federal agencies to consider the effects of their information activities on those governments
3. Records management, with a special focus on the need to properly manage electronic records
4. Electronic collections of information that identify those conditions where agencies should consider using electronic collection techniques to reduce costs or provide better services
5. Information dissemination policy, stating the basic responsibility of all agencies to disseminate information consis-

tent with their missions, and laying out the structure and substance of agency dissemination programs.

While OMB is encouraging agencies to consider the potential benefits of electronic dissemination of information, agencies are still expected to assess the cost-benefits ratio of producing the "the expected public and private benefits derived from government information [which] should exceed the public and private costs of the information."

Under the sponsorship of the Center for the Study of Responsive Law (created by Ralph Nader), the Taxpayer Assets Project has addressed the A-130 revisions. The original A-130 Circular told agencies to place "the maximum feasible reliance" on the private sector for the dissemination of government information, and to avoid duplication of private sector information products and services. The project staff found, favorably, that the 1992 proposed revisions reverse many of these restrictions. They provide "a mandate for agencies to freely use computer technologies to disseminate government information," and ask "Federal agencies to limit prices for information products and services to the costs of dissemination." They also found that "the proposed circular does little to actively encourage broader access to Federal information

resources." Further, the revisions seek "to allow Federal agencies to withhold electronic information products and services from the Federal Depository Library Program, raising the specter of a technological sunset of this important program which provides free access to Federal information through 1,400 libraries nationwide."

The STI Program has a concern that high-level pressure to emphasize public dissemination could distort NASA's mission priorities and add significantly to our costs. A revision that directs agencies to "avoid establishing ... exclusive, restricted, or other distribution arrangements that interfere with the availability of information products on a timely and equitable basis" could diminish the commercial value of a particular product or service. The limitation that requires agencies to "set user charges for information products at a level sufficient to recover the cost of dissemination but no higher" adversely impacts the broader government effort to bring the return on products and services more nearly in line with their actual costs.

OMB solicited comments on the proposed revisions from the general public through August 27, 1992, which are to be included in a subsequent revised circular. ♦

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INFO SHARING

Help us expand our information sources.

Please contribute by completing the questionnaire on page 9. A duplicate is included for your convenience.



**STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION**

FY93 EXHIBIT SCHEDULE

SHOW	PLACE	DATE
AISES '92 <i>American Indian Science and Engineering Society</i>	Crystal City, VA	November 5-8, 1992
DTIC Annual Users Conference	Alexandria, VA	November 6, 1992
Technology 2002	Baltimore, MD	December 1-3, 1992
International Online Conference	London, England	December 10-12, 1992
31st AIAA Aerospace Sciences Meeting	Reno, NV	January 11-14, 1993
National Online Conference	New York, NY	May 4-6, 1993
Annual Meeting for International Aerospace	Crystal City, VA	May 4-6, 1993
NASA STI Managers Meeting	Williamsburg, VA	May 24-28 1993
Special Libraries Association	Cincinnati, OH	June 5-10, 1993
40th Paris Air Show	Paris, France	June 11-20, 1993

STI BULLETIN

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A Quarterly Publication of the NASA Scientific and Technical Information Program

White House Science Office Considers STI

On October 27, 1992, the President's Science Advisor, D. Allan Bromley, sent a memo to all members of the Federal Coordinating Committee on Science, Engineering, and Technology (FCCSET) inviting member agency participation in an Ad Hoc Working Group on Scientific and Technical Information. Senior Administration officials from more than 20 independent agencies support the science mission in the U.S. through FCCSET cooperation. The FCCSET structure operates under the Office of Science and Technology Policy (OSTP).

The stated objective of the Ad Hoc Working Group is to "review and assess current federal approaches to dealing with scientific and technical information and recommend necessary modifications."

This Ad Hoc Working Group has an interesting history. For more than 3 years CENDI, the National Academy of Sciences, and the Office of Technology Assessment (OTA), among others, have discussed with staff from OSTP the need for a coordination and leadership focal point for STI in the U.S. They held many meetings and drafted white

papers. On a more formal track, in 1990 OTA published a document entitled *Helping America Compete: The Role of Federal Scientific & Technical Information*.

This document specifically called for an OSTP leadership role in STI coordination. After a few years and staff changes at OSTP, Pierre Perrolle, an Assistant Director at OSTP, picked up the thread leading to the STI focus. At the same time David Gold, a budget examiner at the Office of Management and Budget (OMB), also focused on STI issues. CENDI continued to raise the discussion and provide technical support to those interested in the issues and opportunities.

(continued on page 3)

TQM Requires Communication and Trust

The STI Coordinating Council was chartered in January 1990 by the STI Program Director, Gladys Cotter. Her vision was to have key Government and contractor staff meet quarterly to discuss areas of importance and to share ideas for improving the STI Program.

Experts in the meeting's topics are invited to give presenta-

tions. At the 9th meeting of the Coordinating Council on October 28, participants shared their experiences with Total Quality Management (TQM). Presenters offered case studies on the process of applying TQM, and reviewed some of the theory and philosophy of TQM.

In this issue we present the first in a series of case studies presented at the October meeting. Given by Wanda Colquitt,

(continued on page 2)

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 - Help in Handling Leaks
- 5 Space Resources Hot Off Presses

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- 8 STI Policy
- 9 New Thesaurus Terms
- 10 Training Courses and News



Watch

for the second of our
TQM Case Studies
in the
January-March 1993
issue of the
STI Bulletin
in the TQM Corner.

TQM Requires Comm. and Trust *(cont. from pg. 1)*

Director of Operations and Analysis at the Center for AeroSpace Information (CASI), the presentation focused on the shift in corporate culture required to improve the process of producing quality products and services.

At the NASA Center for AeroSpace Information, the definition of quality is meeting or exceeding the customer's requirements. CASI's customers are anyone who uses any product or service of the NASA STI Program—a large and diverse group to please. To keep your customers happy, you must build a quality infrastructure to support and anticipate their requirements, and constantly refine your processes to build in quality and continually improve your products and services. To do this, in turn, you must have a culture that supports teamwork and

change, and for *that* you need communication and trust.

One example of how CASI staff applied the principles of Total Quality Management recently is the story of revised input processing. Input processing means entering into the NASA STI Database all reports that come to CASI for that purpose. To attain a goal of more documents entered per day, the process itself had to be changed. This involves several steps:

First, analyze the existing processes. To do this, management established a cross-functional team consisting of a representative of each group involved in the existing process.

this way!" Change is difficult; it produces anxiety and fear in nearly everyone to a greater or lesser degree. To change the way of doing the job in the input processing area required constant communication while one group wrote new programs and another learned to use them, the processing flow was changed, and new schedules were drawn up. Gradually people bought into the process, developed trust, and worked together, across departments, to develop solutions. Ultimately they met all the goals they set.

The lessons learned from this endeavor were that in order to change the way of doing things, you must change the culture.

you must have a culture that supports teamwork and change ...

Next, the team identified the problem. Once they had done that, they could begin to develop new processes; but first they had to reach consensus on how that should be done and what the new processes should be. Then the team set goals for themselves, goals that could be measured so that they could track their progress and strive for continuous improvement. They set a tone promoting change rather than resisting it. The change required the participation of all groups, and that participation meant communication.

You have all heard someone say, "But we've always done it

Open communication is essential. The team must be committed, must reach consensus, and must participate fully in the change. Continual feedback is necessary (How are we doing?). The goal is not only to meet, but to exceed, user requirements. ■

The **STI BULLETIN**, a quarterly publication, informs NASA STI users about the NASA Scientific and Technical Information Program products, services, and news.

Send suggestions and/or material to be considered for inclusion to

Ardeth Taber
STI Bulletin Coordinator
NASA Headquarters, Code JTT
Washington, DC 20546
(703) 271-5546.

White House Considers STI

(cont. from pg. 1)

Finally, in late 1991, there was informal word that Dr. Bromley decided to make STI an OSTP issue and form a working group on STI. About 6 months later, Robert White, Under Secretary of Commerce for Technology, was asked to chair this group and work with a small planning group to prepare a charter and preliminary materials. That planning group consisted of representatives from four agencies (OSTP, OMB, HHS, and NASA) selected by Dr. White and has included active participation by NASA officials. The STI Program has contributed to this preliminary planning process as have other CENDI partner agencies. In addition to the planning group, Joseph Clark was detailed from his position of Deputy Director of NTIS to act as the secretary for the project to help Dr. White get the Ad Hoc Working Group going.

The small planning group has held a number of meetings and has explored a number of ways to identify key issues. They have discussed *principles* underlying STI, a *taxonomy* of STI flow, and a *case study* approach to managing information and data on toxicology and environmental health. STI managers have also briefed the group on issues facing their programs.

The planning group has come to a common understanding of facts and issues that led to a focus on three initial priorities for the Ad Hoc Working Group:

1. An analysis of key laws and policies affecting STI and an evaluation of opportunities for changes, which would improve STI flow;

2. A review of various standards including CALS, STEP, and other new approaches to improve STI sharing; and

3. An assessment of the technological environment to determine if policy changes are needed to achieve the improvements that users have been expecting.

These priorities will be presented at the first meeting of the Ad Hoc Working Group. It is then expected that the working group will proceed to more specifically define the scope of work and the STI issues that it will undertake for the next year. Ultimately, the result of the Ad Hoc Working Group's efforts might realistically lead to recommendations for legislation, Executive Orders, or other mechanisms to achieve improvements in policy.

The next steps, which are currently in progress, are to get officials named to the Ad Hoc Working Group and to schedule a December 1992 meeting. Of course, given the change of Administration combined with the holiday season, it is unclear what will actually occur. It is clear, however, that the Clinton-Gore Administration is positive about the role of science in U.S. competitiveness and is positive about OSTP and FCCSET. Gore himself has a particular interest in the application of information technologies and in STI as evidenced by his sponsorship of the NREN and Information Infrastructure legislation.

This national level policy focus is an exciting opportunity for Federal STI managers. The NASA STI Program will be working through its agency role and through its interagency cooperation under the CENDI umbrella to raise the issues to help improve our national STI infrastructure. We'll keep you informed of progress. ■

Update on Japanese STI

In our last issue, part one of *Gathering Japanese STI in Aviation and Aerospace: The Challenges* discussed the special difficulties of gathering Japanese STI. Negotiations are under way that will provide NASA with rich new sources of STI from Japan. In our next issue, part two of this article will discuss the changes these negotiations will bring.

INTERNATIONAL NEWS

STI Program Sponsors Second Interagency Foreign Acquisitions Workshop

Contributed by Norma B. Spejewski
Background

In the summer of 1990, in discussions between the NASA STI Program and the Air Force's Foreign Aerospace Science and Technology Center (FASTC) at Wright Patterson Air Force Base, a workshop was proposed on handling foreign information. In the spring of 1991 the NASA STI Program, in line with its initiative to improve foreign coverage of the NASA STI Database, launched the effort to encourage agencies to exchange their experiences in the area, so as to better focus activities. There was much to be gained from sharing ideas and resources to make foreign acquisitions more effective in each agency. In

September 1991, 45 individuals from a dozen agencies met for 2 days. The theme of the workshop was the value of representatives in other countries to acquire documents and other information. Much of the time was devoted to overview presentations of the foreign STI programs of the various agencies represented and general information exchange on issues and opportunities. Sessions also addressed translation problems and solutions. It was decided that a follow-on workshop would be held, and the NASA STI Program agreed to take the lead.

Second Workshop

This second workshop was held September 23 and 24, 1992.

Ninety individuals attended, representing 27 agencies. The keynote speaker for the workshop was Dennis Bushnell, Associate Chief of the Fluid Mechanics Division at Langley Research Center. Mr. Bushnell set the tone of the workshop with quotes from John Kennedy, "Strong science and technology is a national necessity, and adequate communication is a prerequisite for strong science and technology" and Derek Bok, "If you think being informed is expensive, you ought to look at the cost of ignorance." Mr. Bushnell talked about the characteristics of STI use, collection, and dissemination among researchers both in this country and in exchanges among other countries. He asserted that STI is the most important and useful experimental facility within NASA.

Bonnie Carroll continued this theme in discussing changing patterns in traditional forms of

(continued on page 6)

STI PROGRAM IN ACTION

Contributed by Ron Sepic

This is the third in a series of case studies that show the STI Program in Action and illustrate the relationship between STI and R&D.

Help in Handling Hydrogen Leaks

In June 1990, a launch of the Columbia space shuttle was called

off because of hydrogen leaks. Several subsequent launches were scrapped for the same reason.

Bob Youngquist, a physicist for Boeing Aerospace Operations at Kennedy Space Center, was put in charge of a team of three physicists assigned to investigate one aspect of the problem.

The team was to conduct a broad search for techniques that

let you detect hydrogen remotely. The leaks emanated from a difficult area to monitor: on the shuttle's midpoint, between the external tank and the orbiter, about 40 feet above the launch platform.

Youngquist and the team wrote up a requirements document detailing the problem. He circulated it to NASA Centers, industrial research centers, and universities, asking all for related literature. Next, he conducted a

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BOOK REVIEWS

Reviews are provided courtesy of the Special Library Association's Sci-Tech News. Unless otherwise noted, reviews are by NASA STI Program staff.

Indexing and Abstracting in Theory and Practice

By F. W. Lancaster

Champaign, IL: University of Illinois, 1981. 328 p. \$39.50 plus \$2.00 shipping. ISBN 0-87845-083-1.

Contributed by June P. Silvester

Lancaster provides detailed instructions, information on theories, techniques, evaluation methods, and handy check lists for the beginning abstractor or

indexer. The section on automatic indexing needs improvement, but the literature in this area is correspondingly inadequate. Twenty-three pages of references, a glossary, a fine index, and exercises for practice make this an excellent text for librarians and others who need to learn abstracting and indexing skills. ■

The Sputnik Crisis and Early United States Policy

By Rip Buckeley

Bloomington, IN: Indiana University Press, 1991. 314 p. \$29.95. ISBN 0-252-31281-7.

Contributed by Philip N. French

The events that preceded the successful launching of the Soviet Sputnik satellite in October 1957

and the space policies of the United States are examined. Actual statements made by Presidents, politicians, and scientists of the period between the end of World War II and the beginning of the Korean conflict reflect the prevailing attitude of the United States concerning an effective space program. The Truman and Eisenhower administrations are compared to show the respective areas of interest and support. The findings of many scientific and governmental organizations, the proposals concerning satellite development, Congressional hearings, and independent views are presented to show divergent opinions. Many references support the statements made in each chapter and establish the credibility of the author. The logical organization of the facts and the extensive coverage answer many questions on early attitudes about the importance of space. ■

NEW PUBLICATIONS

Space Resources is Hot Off the Press

Space Resources, NASA SP-509, is the latest Special Publication to be issued by the NASA STI Program.

Space resources must be used to support life on the Moon and the exploration of Mars. Just as the pioneers applied the tools they brought with them to resources they found along the way, so too must space travelers apply their

high-technology tools to local resources. This set of a brief overview and four detailed technical volumes shows that the large-scale use of nonterrestrial resources is both technologically feasible and socially supportable. Included in this sourcebook are possible scenarios for space development and exploration, power and transportation requirements and means, available materials and processing methods, and social concerns

ranging from human safety to financing.

Space resources considered include lunar soil, hydrogen and oxygen derived from lunar soil, material retrieved from near-Earth asteroids, abundant sunlight, low gravity, and high vacuum. Participants in the 1984 summer study that generated this material analyzed the potential demand and use for many of these products, the techniques for retrieving and

(continued on page 7)

STI Program Sponsors Foreign Acquisition Workshop (cont. from pg. 4)

STI communication. She mentioned several of the issues in foreign acquisitions such as national security and openness of communication, international copyright, and support of national policy initiatives to address STI issues. These issues, along with the problem of timeliness, were brought up several times by speakers from different agencies.

The spirit of sharing knowledge and experience as well as systems was evident at the Second Foreign Acquisitions

to 6 years) to identify foreign materials of interest. They are also discussing with Canada a program in which each country would cover foreign acquisitions in one half of the world.

Operations and plans

Speakers from participating agencies reviewed their current operations for the attendees and told of new programs. Tom Lahrtold of NASA's current objectives and recent activities, mentioning a goal of achieving a balance of STI exchanges between U.S. and foreign documents. Bill Ellis gave a summary of accomplishments of the Library of Congress Scientific and Technology Initiative which it

community has been reevaluating its programs. Their open source activities are undergoing an evolution as they seek to meet the needs of their customers and users for open source materials.

Since many of the foreign acquisitions must be translated and translators are expensive and in short supply, systems and products to aid the process are always in demand. Dale Bostad, from FASTC, described the SYSTRAN Machine Translation System and Betty Jean and Jack Terry discussed OCRs, especially one capable of reading Cyrillic.

The last of the technical presentations was an overview of the Internet, which is the backbone of the NSFnet.

The spirit of sharing knowledge and experience...

Workshop. The phrase "as a result of the first workshop" was heard several times. Blaine Baker stopped in the middle of describing his STILAS system to ask Sybil Bullock if it could tie into her system when it was working. (The answer was yes.)

Caroline Early, representing the National Agricultural Library (NAL), was a newcomer to the workshop group. The library, which deals mostly in biotechnical information, has experienced a surge of interest in foreign technical literature. Ms. Early described a couple of collection development techniques not mentioned by other participating agencies. The library takes liberal advantage of the expertise of visiting librarians (who come to NAL for 6 months

now in the planning and implementation phase.

Bob Freeman from NTIS talked about their activities in the foreign acquisitions business. At NTIS there is a new free "Custom Hot Topics" Service, delivering up to 100 current abstract records from a scientist's field using the National Center for Science Information Service (NACSIS) Japanese-language databases.

The State Department updated us on their Foreign Publications Procurement Program (FPPP) and their operations in the Commonwealth of Independent States, Eastern Europe, and China.

With the new developments in the world and the shift from military competitiveness to economic competitiveness, the intelligence

1993 workshop

FASTC and the NASA STI Program will be joint sponsors of the 1993 workshop. A steering committee has been established to make plans for the workshop, which could include themes such as the many aspects of gray literature, copyright, access to foreign databases, and foreign STI users. Both the 1991 and 1992 workshops had a reference manual for attendees. These contain descriptive material about agency programs and copies of presentation materials. For those who did not attend, these manuals are available at \$25 each by calling 615-481-0388. For information about the next workshop, call John Wilson at 703-271-5625. ■

PEOPLE IN THE NEWS

STI Program Personnel Honored at NASA Awards Ceremony

Four individuals and one team from the STI Program, who were nominated by their peers, were presented with awards at the 1992 NASA Headquarters Honor Awards Ceremony on October 27 in Washington, DC.

The ceremony began with music by the United States Marine Band and the presentation of colors by the Armed Forces

Color Guard. General Spence M. Armstrong, Associate Administrator for Human Resources and Education, performed the introduction and Daniel S. Goldin, NASA Administrator, gave the opening remarks. Mark S. Hess, Public Affairs Officer of the Office of Space Flight, read the citations while Mr. Goldin and his Chief of Staff, Darleen A. Druyun,

presented the awards. The ceremony was followed by a reception at NASA Headquarters.

Gladys A. Cotter, Chief of the STI Program, received the Equal Opportunity Achievement Award for her contribution to improve the workforce environment through her active support of the Headquarters equal opportunity affirmative action principles. Her recruitment activities helped to reduce the underrepresentation of minorities at NASA. Ms. Cotter was additionally recognized for counseling and advising her

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STI Program in Action

(cont. from pg. 4)

literature search with the help of Kennedy's STI Program professionals.

"I supplied the librarians with key words such as 'hydrogen,' 'sensing,' and 'remote,' and they set up a worldwide literature database for me," said Youngquist. "As my research evolved, I kept fine tuning the information I wanted by changing the keywords. The literature that turned up was an immense help. As it turned out, we didn't get anything from the Centers that didn't show up on our STI Program literature search."

In early January 1991, the Youngquist team's efforts were augmented by a 3-day conference on the hydrogen leak problem held at KSC. Scientists and engineers from nearly every

NASA Center and numerous industrial centers toured the pad, held meetings, and discussed technologies.

The situation crystallized later that month. Based on their research, Youngquist and his colleagues devised a fairly complex approach to solving the problem, although it required large funding. At the same time, other NASA scientists had found the source of the leaks and repaired them.

The work of Youngquist and his associates was a great success. "Hydrogen leaks are an ongoing problem," he said. "Now we know what key technologies other people are using. The work we did will serve as a foundation for work we may have to do in the future."

At the moment, KSC scientists are monitoring the hydrogen leak situation.

Youngquist and his associates stand by ready to offer their expertise once again. And STI Program professionals are there as well, eager to help, as needed. ■

Space Resources is Hot Off the Press

(cont. from pg. 5)

processing them, the necessary infrastructure, and the economic implications.

Though the ideas in *Space Resources* are futuristic, the book is well documented, with almost 600 supporting references. This characteristic makes it suitable as a text or sourcebook for education at several levels. The lavish illustrations and accessible writing ensure that this publication will be of interest to the general public.

Space Resources is available from CASI (301-621-0390). For additional information, call Lee Blue, 301-621-0157. ■

STI POLICY

GPO Public Access Bill Fails in Senate

Contributed by Philip A. Thibideau

The U.S. Government Printing Office (GPO) Electronic Information Access Enhancement Act of 1992, H.R. 5983, died in the Senate in the final days of the 102nd Congress. The bill, sponsored by Rep. Charlie Rose (D-N.C.), was a compromise introduced into the House on September 22 as a substitute for the GPO WINDO (Wide Information Network for Data Online) bill, H.R. 2772, and the GPO Gateway to Government Act, S. 2813 (sponsored by Senator Gore). Republican House members succeeded in pushing H.R. 5983 through the House on September 29.

The WINDO and Gateway bills would have established in the GPO a central point of free online public access, through Federal Depository Libraries, to a wide range of Federal agency databases. S. 2813 sought even broader public access through computer networks like Internet and the future National Research and Education Network (NREN) for a modest fee. The compromise bill was more restrictive and limited public online access to the Congressional Record, the Federal Register, and an electronic directory of public information in Federal online databases. It directed the GPO to study the feasibility of broader access through networks such as Internet. The latter provision was, in fact, enacted as part of the Legislative Appropriations Act,

H.R. 5427, and signed into law on October 6. The Public Printer, Robert H. Houk, was quoted in the *Federal Computer Week* (October 26, 1992) as asserting that H.R. 5983 "would have codified GPO's authority to oversee public dissemination of electronic as well as printed government material." Congressman Rose is expected to reintroduce the bill in the new Congress.

In an "OP-ED Comment" in the same issue of *Federal Computer Week*, James Love, Director of the Taxpayer Assets Project, Ardmore, PA, asserts that H.R. 5983 was delayed by opposition from the Office of Management and Budget and several commercial data vendors, among others, who raised fears that the program would be too expensive to fund. Love concludes that the costs have been exaggerated and proceeds to analyze what he sees as the four

(continued on page 11)

Headquarters Issues Guidance on Use of Duplicating Equipment and Procurement Procedures

Contributed by Philip A. Thibideau

The Associate Administrator for Management Systems and Facilities, Benita A. Cooper, has recently issued two Information Resources Management Information Notices (IIN 92-4 and IIN 92-5) establishing interim policies for the management of duplicating and copying equipment and establishing specific procedures for submitting Printing Procurement Requests.

With regard to duplicating and copying equipment (IIN 92-4), the Installation Printing Management Officer (IPMO), in conjunction with the Installation Copying Management Officer, has the responsibility for managing duplicating and copying equipment requests to ensure that their installation's needs are met with the optimum economy of operation. Requests for acquisition of duplicating and

copying equipment must be submitted through the IPMO, who retains overall responsibility for this process. The IPMOs are charged with preparing quarterly reports to Headquarters. This cost categories: data processing, telecommunications, support, and library terminals and workstations.

Love believes that the most significant expense is the initial

(continued on page 11)

Awards Ceremony Honors STI Personnel *(cont. from pg. 7)*

employees on their careers, promoting teamwork and the quality of life in the STI Program Office.

Thomas F. Lahr, NASA International Liaison for the STI Program Office, received an award for Cooperative External Achievement. Mr. Lahr has been instrumental in improving cooperation with worldwide scientific and technical information partners. He has instituted face-to-face meetings with major contributors to the international STI exchange program, such as Canada, Japan, Australia, and the European Space Agency. He was also recognized for conceiving and implementing the first meeting outside the U.S. of contributors to and users of the NASA STI Program. Mr. Lahr's commitment and dedication has resulted in program efficiencies and better ways of establishing and maintaining relationships with foreign STI exchange partners.

James M. Erwin, Head of Information Systems for the STI Program, received the Space-Ship Earth award for his dedication and service to his local community. He has been Den Leader for the Cub Scouts of America, working with the youth to promote community values and educate them on environmental awareness issues. He has also served as head coach of local Little League baseball and football teams. He averages 15 hours a week of community service including

coordinating and organizing fund raising drives, social gatherings, and team spirit.

A Special Award was presented to **Wanda H. Colquitt**, Director of Operations and Analysis at the NASA Center for AeroSpace Information, for her significant contributions to strengthening and broadening the availability of scientific and technical information by the NASA community. Her exceptional performance yielded a 100 percent reduction in the turnaround time for technical reports to be made available to users of the NASA STI Database. Implementation of these improved processes provided measurable improvement in access to the NASA scientific and technical information.

The STI Council Support Team received a Special Service Award...

The STI Council Support Team received a Special Service Award for its work in assessing the extent to which the STI Program products and services are used. From April 1991 to April 1992, team members developed, conducted, compiled, and reported the results of a user survey conducted at the NASA Centers to a base of more than 7,000 users.

Some of the statistics collected thus became available for the first time. The team leader, **Kristin Ostergaard**, accepted the award for the group, whose members included **Donna Medric**, **Terry Reed**, **Cynthia Shockley**, **Denise Duncan**, and **Ardeth Taber**. ■

New Thesaurus Terms

These new terms are currently available on NASA/RECON. Your suggestions for additional new terms are welcome; just call ACCESS, the STI Program Help Desk, at 301-621-0390.

ALEXANDRITE

BENZOQUINONE
Use QUINONES

BRAIDED COMPOSITES

CHINONE
Use QUINONES

ENGINEERS

FISHING

H-INFINITY CONTROL

HEMT (ELECTRONICS)
*Use HIGH ELECTRON
MOBILITY TRANSISTORS*

HIGH ELECTRON MOBILITY
TRANSISTORS

POLYMER ALLOYS
Use POLYMER BLENDS

QUINONES

WOVEN COMPOSITES

TRAINING COURSES AND NEWS

NASA RECON Training Schedule 1993

The 1993 NASA RECON training schedule is as follows:

Monday, January 11
Monday, February 8
Thursday, March 18
Thursday, April 8
Monday, May 3
Monday, June 28
Monday, July 12
Monday, August 9
Monday, September 13
Monday, October 4
Monday, November 29
Monday, December 13

These dates are designed to mesh with DTIC's DROLS training schedule—either just before or just after—so that people can come for both at once.

All classes currently scheduled will be held at the NASA Center for AeroSpace Information near Baltimore, MD. Class size is limited to 12. Basic and advanced training will now be combined into one class session.

Class content

The contents of the NASA STI Database and its file and record structures are covered in detail, along with RECON commands. Users will learn search strategy formulation, Boolean logic, query analysis, and stored search formulation and editing. Lecture is combined with hands-on practice. Refreshments are provided.

To register

Pre-registration is required for all training sessions. To register, call the Access Desk at (301)621-0390 or request registration by Internet at help@STLNASA.GOV. If a preferred session is closed, ask to be wait-listed. Each registrant will receive an individual confirmation letter. Reservations may be cancelled or changed up to five (5) business days before the session. Cancellations after that date, and no-shows, will be billed for the full amount.

Cost

NASA users are entitled to one free training class per new user ID. The price of \$100.00 is for non-NASA personnel. You may be billed to a standing RECON purchase order, to a new purchase order, pay with a company or personal check (payable to RMS Associates), or charge the fee to your VISA or MasterCard.

Register Now for NFAIS Courses

National Federation of Abstracting and Information Services (NFAIS) courses provide educational opportunities as well as a chance to network and exchange ideas. Remember, the STI Program is a member of NFAIS, so you can register at member rates. The Winter/Spring 1993 course schedule is as follows:

ABCs of Information Marketing

Wednesday, Jan. 20
Philadelphia, PA
\$230 nonmembers
\$190 NFAIS members
before December 31, 1992:
\$220/\$180

Train the Trainer

Thursday, Feb. 4
Washington, DC
\$300/\$240
\$285/\$230

Information Industry Overview

Wednesday, Mar. 17
Washington, DC
\$180/\$150
(\$50 library/information science students)
\$170/\$140

Hiring, Training, and Retaining Abstractors and Indexers

Thursday, Mar. 18
Washington, DC
\$180/\$150
\$170/\$140

Loading a Database: Systems Information for Nonsystems People

Wednesday, Apr. 21
Philadelphia, PA
\$230/\$190
\$220/\$180

To register write, call, or fax:
National Federation of Abstracting and Information Services
1429 Walnut Street, Philadelphia, PA 19102 - 215-563-2406, fax 215-563-2848. ■

STI Program Participants Can Attend NFAIS Conference At Member Rate

If you are part of the NASA STI Program, you qualify to attend the 1993 NFAIS Annual Conference at the member rate. The NASA STI Program is a member of NFAIS. The conference, whose theme this year is "If Change Is Inevitable, Why Aren't We Changing? — Or Are We?" will be held February 22-24 at the Washington Marriott, Washington, DC.

Founded in 1958, the National Federation of Abstracting and Information Services is a membership organization comprising more than 65 leading information producers, distributors, and corporate users of secondary information. Its purpose is to serve the information community through education, research, and publications. Early conference registration must be paid and

postmarked on or before January 15, 1993.

For more information write, call, or fax:
National Federation of Abstracting and Information Services
1429 Walnut Street,
Philadelphia, PA 19102
215-563-2406, fax 215-563-2848

AIAA Offers Technical Courses

Following is the schedule of AIAA courses for January-April 1993. For additional information call or fax David Owens at 202-646-7447, fax 202-646-7508.

JANUARY: Theoretical & Computational Methods in Structural Acoustics, Reno, NV, Jan 9-10, Course 4a; CFD on Parallel Processors, Reno, NV, Jan 9-10, Course 4b; The Space Environment Implications for Spacecraft Design, Reno, NV, Jan 9-10, Course 4c; An Introduction to Interactive Computer Graphics, Reno, NV, Jan 9-10, Course 4d;

FEBRUARY: Spacecraft Systems Design & Engineering, Washington, DC, Feb 9-12, Course 5; Perspectives in Aircraft System Design, Irvine, CA, Feb 20-21, Course 6; Topics in Spacecraft Design, Irvine, CA, Feb 20-21, Course 27; An Analyst's Guide to Space, Monterey, CA, Feb 25-27, Course 7;

MARCH: Dynamic System Engineering: A Guide to Understanding & Implementing System Engineering, Washington, DC, March 15-18, Course 8; Aerospace Standards: Establishing & Managing a Company Standardization Program, Washington, DC, 29-31, Course 10; Introduction to Software Reliability, Washington, DC, March 10-11, Course 11;

APRIL: Airline Maintenance and Operations: How it Relates to Reliability and Maintainability in the Design Process, Washington, DC, April 5-6, Course 30; Space Systems Costing and Economics, Washington, DC, April 28-30, Course 28.

GPO (cont. from pg. 8)

cost of storing the data and developing the software for data retrieval. "The incremental costs of adding new users to existing systems are often trivial." He cites a National Library of

H.R. 5983 "would have codified GPO's authority to oversee public dissemination of electronic as well as printed government material."

Medicine official who claimed they could quadruple MEDLARS users for about one-third of annual revenue. With regard to telecommunications, he cites Congress's separate funding of

NREN. Concerning support costs, he sees public access developing a greater demand for agencies' sales programs, thereby increasing revenues. In the context of the Depository Library Program, he sees participating libraries picking up the costs for new terminals and workstations because these are the types of costs that libraries have historically paid.

Headquarters Guidance

(cont. from pg. 8)

guidance will be incorporated in the forthcoming NASA Printing Management Handbook.

Concerning the procurement of printing services from contractors or commercial sources,

IIN 92-5 cites the provisions of Section 207 of the Legislative Branch Appropriations Act of 1993 that, in general, prohibit the expenditure of appropriated funds for the procurement from commercial sources of any printing for government publications, including printed forms, unless such procurement is by or through the GPO. Limited exceptions require the written approval of the GPO or the Joint Committee on Printing (of Congress).

For further information on either of these issues, please call or write to the NASA Printing Management Officer, Fred Moore, Code JTT, 202-358-1389. ■

NASA Center for AeroSpace Information
800 Elkridge Landing Rd.
Linthicum Heights, MD 21090-2934

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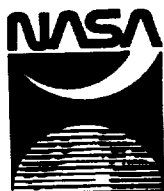
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Send your news or information
to be considered for inclusion in the
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than February 1, 1993. Send a copy
and, if possible, a disk to:

Ardeth Taber
STI Bulletin Coordinator
NASA Headquarters, Code JTT
Washington, DC 20546



**STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION**

FY93 EXHIBIT SCHEDULE

SHOW	PLACE	DATE
31st AIAA Aerospace Sciences Mtg	Bally Hotel Reno, Nevada	January 11-14, 1993
National Online Annual Mtg Information Transfer	New York Hilton New York, New York	May 4-6, 1993
Annual Meeting for International Aerospace	Crystal City Hyatt Crystal City, VA	May 4-6, 1993
IEEE Mohawk Valley Dual Use Tech Appl. Conf.	New York State College Utica/Rome New York	May 24-27, 1993
NASA STI Managers Meeting	McGruder Inn Williamsburg, VA	May 24-29, 1993
Special Librarian's Association Information Transfer	Cincinnati Conv. Ctr Cincinnati, Ohio	June 5-10, 1993
40th Paris Airshow	Parc De Expositions Paris, France	June 11-20, 1993

1993

STI BULLETIN

A publication for users of the NASA Scientific and Technical Information Program

Vol. 23, No. 1

Spring 1993

NASA and National Space Development Agency of Japan Sign Information Exchange Agreement



Thomas Lahr - Manager, NASA International STI Program / Naoko Nihei - NASDA Technical Information Division / Miyuki Akiyama - Director, NASDA Technical Information Division

Contributed by Laurie Harrison and Glenn Hoetker

Part 1 of this article, which appeared in the July - September 1992 *STI Bulletin*, discussed the challenges of gathering Japanese information. Part 2, below, discusses a major step forward in overcoming these challenges.

In November 1992, a National Level exchange agreement between

NASA and the National Space Development Agency of Japan (NASDA) was finalized and signed, introducing a new level of international STI cooperation. The agreement is the culmination of two years of negotiation and consensus building by STI professionals in both agencies and is designed to be mutually beneficial to the aerospace communities of both countries.

What is a "National Level Exchange Agreement"?

To establish STI exchange agreements on a national level, NASA pursues an agreement with a governmental organization with aerospace responsibility within a given country. The NASA counterpart organization coordinates the exchange of aerospace information between NASA and that country, providing the aerospace communities in each country with a central point of information exchange.

The recently signed agreement with Japan calls for a two-phased approach to full exchange status.

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Prototype Electronic Publishing System Under Evaluation

Contributed by the STI Program

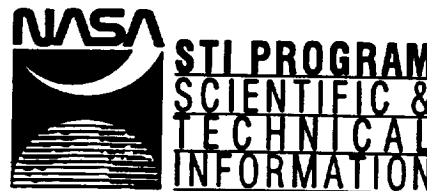
Many NASA authors now use personal computers (PCs) and Macintosh computers (MACS) along with word-processing, graphics, and page-layout software to produce camera-ready documents. Often, these authors find they have only traditional, time-consuming, and often costly mechanisms available for making copies of these documents, even when no color is required, despite technology that supports the electronic transfer of data and varied options for printing. In 1992, NASA began exploring different ways to support the printing of publications that are being generated in digital format throughout NASA. Today, a prototype Electronic Publishing System (EPS) is being evaluated to determine its future applicability for NASA. The prototype is receiving attention outside NASA: Congress' Joint Committee on Printing has requested a copy of the EPS Evaluation Report to aid its development of Federal electronic publishing standards, and the feasibility of electronic file transfer to

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STI PROGRAM
SCIENTIFIC & TECHNICAL
INFORMATION

31st Aerospace Sciences Meeting and Exhibit

The American Institute of Aeronautics and Astronautics (AIAA) hosted the 31st Aerospace Sciences Meeting and Exhibit in Reno, NV, January 11-14, 1993. This meeting has the largest selection of technical papers of any meeting sponsored by AIAA. Its purpose is to bring together those engineers and scientists who participate in science and basic research in aerospace engineering. Participation from industry, government, and academia gives a balanced perspective of the scientific and technological challenges facing the aerospace community.

The meeting is supported by 21 Technical Committees of AIAA, resulting in a diverse program that encompasses both the aeronautical and astronautical aspects of our industry. Technical Committees are established for particular areas of interest. One committee in particular addresses issues related to the support of scientific and technical information. Every year this committee, the Technical Information Technical Committee, hosts a session at the conference devoted to the acquisition, publication, processing, and distribution of scientific and technical information among different members of the scientific community.

This year's session, Aerospace Information Resources, was chaired by Donald Petersen, who is a member of the LTV Aerospace and Defense Company in Dallas, TX. Of the eight papers ac-

cepted for presentation, the following five were presented by members of the NASA STI Program:

- A General Approach to Measuring the Value of Aerospace Information Products and Services, by H. Brinberg, Parnassus Associates International and Thom Pinelli, NASA Langley. Brinberg, who presented the paper, addressed the economics of scientific and technical information. He discussed how, while most approaches to valuation tend to be limited to measurement of costs (the supply side), economic value does not exist without use or benefits (the demand side). Within this context, he presented the concepts of value and approaches to value assessment from two perspectives. First, he considered how the available literature addressed the issue, as well as the classification of various approaches to the measurement of benefits. He used the classifications as a guide to the development of a general framework for valuation. Second, he addressed the relationship of measurements to purpose and application. From the blending of the two perspectives, Brinberg described models by which information products and services could be tested and validated in future real-life situations.

- Total Quality Management—It Works for Aerospace Information by James Erwin, NASA STI Program, Wanda Colquitt and Carl Eberline, NASA Center for AeroSpace Information (CASI). Erwin presented the paper, describing how CASI is focused on using continuous improvement techniques to enrich today's services and products and to ensure that tomorrow's technology supports TQM-based improvement of future STI Program products and

services. He introduced the Continuous Improvement Program at CASI as the foundation for its Total Quality Management in products and services and defined its purpose: to establish quality through an iterative approach that is based on the incorporation of standards and measurements into the processing cycle. Mr. Erwin described four projects that used cross-functional, problem-solving teams for identifying requirements and defining tasks and task standards, encouraging management participation and attention to critical processes, and for measuring long-term goals.

- NASA Scientific and Technical Information Program—User Survey by Judy Hunter and Cynthia Shockley, NASA Headquarters. Hunter presented the paper, which addresses an extensive user requirements survey that was performed by the NASA STI Program both in response to STI Council direction and to improve the foundation of the Program's user outreach program. She defined the survey period, January to March 1992, and described the survey methodology. 550 NASA

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The *STI BULLETIN*, a quarterly publication, informs NASA STI users about the NASA Scientific and Technical Information Program products, services, and news.

Send suggestions and/or material to be considered for inclusion to
Ardeth Taber-Dudas
STI Bulletin Coordinator
NASA Headquarters, Code JTT
Washington, DC 20546-0001
(703) 271-5546.

AGARD Report Publication and Request for Comments

Contributed by Walter R. Blados

The Technical Information Panel (TIP) of the NATO Advisory Group for Aerospace Research and Development (AGARD) recently published AGARD Advisory Report 316, A Research Agenda for Scientific and Technical Information, November 1992. A copy of this report can be obtained from the NASA Center for Aerospace Information (CASI) by calling 301-621-0390, sending a fax to 301-621-0134, or using Internet, HELP@STI.NASA.GOV.

This report presents the results of a workshop held by the TIP on

April 7-9, 1992, in Lisbon, Portugal. It includes three position papers on user needs, information access, and the organization and transfer of information, prepared by the authors as a result of the discussion of the workshop. The outcome of the workshop, in the form of a 53-item research agenda, encompasses three topics: information management, provision of information, and access to information. Each topic is examined from the aspects of human resources, quality assurance, cost, and technology, where appropriate. The report also includes a list of 15 additional areas meriting further investigation, which were identified by participants during the final session of the workshop.

This report constitutes a first cut at establishing an international research agenda for information

science. AGARD/TIP would like individuals and organizations such as the American Library Association (ALA) and the Special Libraries Association (SLA) to review this agenda and provide comments to support the comprehensive critique effort now under way to refine the AGARD agenda for use as the basis of establishing a true national agenda.

We invite each of you to join this comprehensive review effort. You can submit your comments to Gladys Cotter or Thom Pinelli, NASA STI Program, Code JTT, Washington, DC 20546; phone 703-271-5634; fax 703-271-5665. We will acknowledge each submission, and will keep you informed of what is happening. Thanks in advance for your interest and cooperation. ◇

Prototype Electronic Publishing System Under Evaluation (cont. from pg. 1)

the Government Printing Office (GPO) is scheduled for testing in the future.

What Is an Electronic Publishing System?

The simplest versions of electronic publishing systems can consist of a desktop PC or a MAC, word processing software, and a laser printer. These are normally used to create single, camera-ready "master documents," which are physically taken or sent elsewhere to be copied or printed, and bound.

The more sophisticated electronic publishing systems consist of individual PCs, MACs, or other types of workstations for input: a local area network (LAN)

and the components of one or more high-speed laser printer systems. The components of these high-speed laser printer systems can include hardware, software, file server(s), workstation(s), media server hardware, network server hardware and software, and accessories such as CD-ROM-based file storage and binding capabilities.

These electronic publishing system configurations allow users to create their documents at their own workstations, electronically transmit those documents and their "job tickets" to a high-speed laser printer, and receive their specified number of bound copies quickly. The "copies" are all originals, not first- or second-generation duplicates.

While an organization may continue to use its low-speed laser

printers for draft purposes, there are clear efficiency, productivity, and fiscal advantages to leasing one or two high-speed laser printers and using fewer low-speed laser printers, copiers, and binding machines. This is especially true when an organization is comprised of several remotely located components.

What Comprises the Prototype EPS Efforts at NASA?

In March 1992, a concept paper was developed and distributed that outlined a proposal for a prototype electronic publishing system. In May, two vendors of high-speed laser printer systems, Xerox and Kodak, were identified. Vendor cost information was requested and initial system tests were scheduled using electronic transmittal of documents through

(continued on page 4)

The Continuing Criticality of STI — An Informal Seminar

Contributed by Bonnie Carroll

In the past three decades, there has been cyclical concern by the Congress and those leaders in the Federal executive branch about the ways in which scientific and technical information (STI) can serve the nation. This focus, since the advent of Sputnik I in 1957, has taken a number of forms: orbiting craft, defense-oriented projects such as SDI, programs with social service ramifications, and endeavors attuned to global needs and conditions.

In an informal seminar conducted for senior NASA personnel, held on March 3, Robert Lee Chartrand, widely recognized in

STI circles for his work over the past quarter-century as a Senior Specialist in Information Policy and Technology with the Congressional Research Service (Library of Congress), offered a useful perspective asserting that the past (lessons learned) often can provide a highly useful prologue. In particular, he reviewed some of the initiatives in which NASA has played a key role. Innovative utilization of advanced information technology — computers, telecommunications, satellites, “futuristic” software — was emphasized.

Among these past notable activities in which NASA showed imagination and a willingness to commit resources were:

- “Domestic Information for Decision Making,” wherein NASA equipment and software were

combined with U. S. Census data to present domestic statistics in a multi-color graphic form which allowed decision makers to better comprehend current social and economic patterns and human requirements. More than 20 Federal agencies participated in this program over a five-year period.

- “Videoconferencing Via Satellite: Opening Congress to the People,” an action research project performed with NASA funding that was designed to provide a new mechanism for informed dialogue between congressmen and their constituents, thereby strengthening the legislative process.

- Utilization of the U-2 aircraft in furnishing a unique high-altitude perspective for governmental

(continued on page 8)

Prototype EPS Under Eval. *(cont. from pg.3)*

the NASA Science Network's (NSN) Internet link and through a PC modem using ProComm software.

The electronic publishing system prototype effort consists of three EPSs that will be interconnected by telecommunication links via the NSN Internet system. Two of these EPSs are located at the Lewis Research Center, one using the Xerox DocuTech and the other using the Kodak LionHart. The third EPS, using the DocuTech, is located at the Jet Propulsion Laboratory.

Evaluation of the EPSs

The evaluation period began February 1, 1993, and will run for

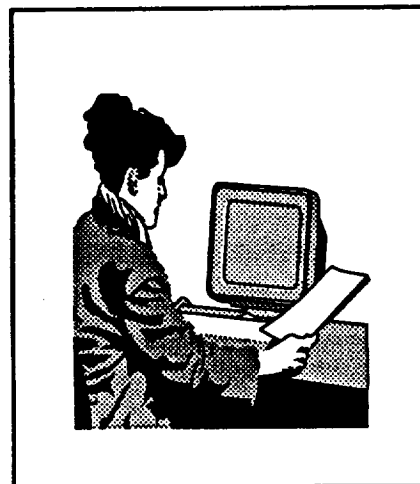
90 days. Employees at each installation will test the systems using the following capabilities:

- Electronically generating a document and a job ticket at their workstations and transmitting these to the EPS.
- Preparing a diskette of the publication and “walking” or sending it to the installation's duplicating facility for printing.
- Preparing a diskette of the publication and sending it to GPO.

In addition, during the same period, there will be a test of electronic file transfer capabilities between NASA Headquarters and the two installations, as well as

between the two installations themselves. The electronic files will be transferred by the NSN through Internet links.

The prototype EPS Evaluation Report will be a single report based on data from each installation's evaluation. ◇



Langley Researchers Let Their Fingers Do the Walking

Contributed by Ron Sepic

Thanks to a service recently offered by the NASA Langley Research Center's Technical Library, Center researchers can do more work in less time than ever before.

Since the first quarter of 1992, Langley researchers have been able to access the Technical Library's citations from their workstations using the Center's wide area computer network, LaRCnet. This service is available to all of the Center's 2,500 scientists and engineers.

Using LaRCnet, users can connect to the Scientific and Technical Information Library Automated System (STILAS), the integrated library system that provides access to listings of the library's entire book and journal collection, as well as to portions of the document holdings.

The advantages are obvious. Researchers no longer have to walk or drive to the library, or phone the librarians and ask them to do a search. Neither the sweltering heat of August nor the frosty winds of February affect a researcher's ability to access the library's extensive holdings. Year-round, it's nearly as simple as logging onto your computer.

STILAS is only the latest library search tool available to Langley researchers on LaRCnet. Since the mid-1980s, Langley researchers have had desktop access to the NASA STI Database via RECON (REsearch CONnection), the STI Program's original information retrieval system.

Cathy McGinley, an aerospace engineer in Langley's

Experimental Flow Physics Branch, is a strong advocate of telecommuting to the Center's Technical Library. "I'm a heavy user of the library's online systems," says McGinley. "I usually make searches on RECON or STILAS every other week, and it's great not to have to trudge over to the library to do them."

McGinley says she also likes the control this new system gives her. "The librarians can certainly be very helpful," she says. "But I prefer to search for documents on my own, right here at my desk. That way, I have immediate access to the citations. In a time-sensitive environment, that's important."

Speedy literature searches are especially appropriate for researchers like McGinley who are committed to the development of aircraft that travel at hypersonic speeds (more than 3,000 miles per hour).

McGinley, who has completed the first two years of her Ph.D. in Aerospace Engineering, says her most recent search was on a turbulence boundary layer investigation.

"When you're working in hypersonic research," she says, "information from literature searches goes a long way in helping you design better experiments. The results of these experiments will eventually produce turbulence models, which will be used to design the hypersonic vehicles of the future."

"The library is always looking for new ways to serve us better," McGinley concludes. "Connecting STILAS to LaRCnet is just one example. Once you're in STILAS, you can see which items the library has, and which are checked out. If you need an item

right away, you simply pick up the phone and talk to the person who has it. And, once again, you've never left your work area." ◇

New Thesaurus Terms

These new terms are currently available on NASA RECON. Your suggestions for additional new terms are welcome; just call ACCESS, the STI Program Help Desk, at 301-621-0390.

Chemical Vapor Infiltration

CVI (Fabrication)
Use Chemical Vapor Infiltration

FBL Control
Use Fly By Light Control

Fly By Light Control

Forth (Programming Language)

Galactic Algorithms

HTSC (Superconductors)
Use High Temperature Superconductors

Laser Deposition

Photoexcitation

Pulsed Laser Deposition

Scintillation Fibers
Use Scintillating Fibers

Scintillating Fibers

Simulated Annealing

Superconducting Cavity Resonators

Superconducting Devices

TEM (Microscopy)
Use Transmission Electron Microscopy

Transmission Electron Microscopy



Lewis Research Center Publication Policy Review

Contributed by Joyce Cieszewski

In 1992, the Editorial Branch, Technical Information Services Division (TISD), reviewed Lewis Publication Policy. Three teams developed, distributed, and compiled the results of a survey sent to all research authors and research and technology (R&T) project managers at Lewis. Several teams interviewed researchers who have been at Lewis for 30 years or more to gather their opinions of "what it was like years ago and what it is like now." We reviewed the NASA Management Instructions (NMIs), NASA Handbooks (NHBs), Lewis Management Instructions (LMIs), and Lewis Handbooks (LHBs) about publishing, reviewed the consistency of the review and approval process at Lewis (past and present), distribution restrictions, Agency issues we have to deal with or should be dealing with, Contractor Report policy, publishing practices at other Centers, and the value of forming a publication users committee.

In 1967 a Center-wide team of managers had considered many of these same questions and identified many problems and concerns which still exist today. Those included the following: insufficient editorial staff to produce work in a reasonable time; technical review tasks falling to editors (that the technical reviewers should have done); bottlenecks in the production process resulting from

insufficient staff; low priority assigned to NASA reports; delays in review process, causing authors to lose their sense of urgency; preliminary information submitted as final by author; and the author's expectation of numerous review cycles with many opportunities to make changes after submission for publication. Survey respondents indicated an interest in

(continued on page 9)

Contributed by Goddard Space Flight Center

The Goddard Library Says Farewell to One of Its Finest

John Boggess, Debuty Library Branch Head, announced his retirement effective January 3, 1993, after 27 years of outstanding service to the library and a total of 35 years in the Federal Government.

Goddard Library Assists Local Students

Throughout the fall of 1992 approximately 25 local high school students visited the Goddard Library to research topics for papers to be submitted to the following competitions: the Aerospace Internship Competition, the Interplanetary Art Competition, the Future Aircraft-Spacecraft Design Competition, the Mission to Planet Earth Competition, or the Mars Science Expedition Project Competition.

The students searched NASA RECON, NASA ASTRO/CD, and ARIN to locate information on microgravity, the space station environment, and its effect of microgravity on the human body. All of the students cited these databases

as invaluable resources for their research.

Goddard Library Online Bibliographic Access Locator (GLOBAL) Presentation

At the mid-winter conference of the American Libraries Association, Goddard Librarian Janet Ormes presented information about the GLOBAL program, which provides electronic assistance in identifying, locating, and accessing print resources and library databases. GLOBAL consists of several modules, including information about the library, guidance to appropriate information resources on a variety of subjects, and connectivity to electronic databases. Ormes's demonstration of this leading-edge technology at the AI/Expert Systems Interest Group's "Expert Systems Fair" yielded a great deal of interest from the participants.

Supporting NASA's Scientific Missions

In support of the Cosmic Background Explorer (COBE) project, the Goddard library searched the NASA STI Database using NASA RECON to create a customized electronic database composed of hundreds of citations to reports and journal articles spanning over a decade. Updates to this search will be automatically sent to COBE scientists, who foresee a heavy reliance on this information for future research. By using this customized database, scientists were saved several weeks of identifying, retrieving, and compiling these often obscure and invaluable citations. The papers that were subsequently published by the COBE team have been very well received in the scientific community. ◇

NASA and National Space Devel. Agency of Japan Sign Info. ... (cont. from pg. 1)

During the first stage of the agreement, NASA will exchange selected technical reports and bibliographic literature for similar material from initial participating organizations in Japan, coordinated by NASDA. As a national partner, NASDA will seek to establish cooperative relationships among other interested Japanese organizations that can contribute to an equitable NASA STI exchange. Aerospace-related STI will be collected, and bibliographic records and abstracts will be processed in English by NASDA and then forwarded electronically to become part of the NASA Aerospace Database.

Test batches of such material have been received periodically since 1988 and entered into the NASA STI Database. NASA CASI staff have analyzed this material and provided feedback to NASDA. These efforts should help to speed the transition to the second phase of the agreement.

In the full-cooperation stage, NASDA and other participating organizations will gain approved electronic access to the NASA Aerospace Database.

Professional Cooperation

A key step in establishing this agreement was taken in June of 1992 when NASA received guests from NASDA to discuss the most recent draft of the agreement. The parties made significant progress during their talks, as verified by the completion and signing of the agreement by both sides by the end of the year.

In addition to discussion of the protocol, the June visit provided an opportunity to establish a num-

ber of professional contacts between the NASDA representatives Miyuki Akiyama and Naoko Nihei and the NASA STI team, including Wallace O. Keene, Director of Information Resources Management, and Gladys Cotter, Director of the NASA STI Program.

A two-day workshop at CASI provided the Japanese visitors with an overview and tour of processing facilities and allowed for detailed discussion of the cataloging, abstracting, and indexing of documents for input into the NASA Aerospace Database. Sessions between NASDA and CASI catalogers were particularly productive, helping to clarify many points of confusion, including those arising from linguistic and cultural differences. For instance, the participants discussed the differences between U.S. and Japanese corporate structures and how this affects cataloging practices for the NASA Aerospace Database. Both sides learned a great deal from direct discussion and exchange of professional expertise.

The new agreement will help overcome each of the challenges discussed in part 1 of this article:

Language - NASDA will provide English-language citations, including abstracts, of each document added to the database. While it will still be necessary to translate some original documents, the English citations and abstracts will make it easier to identify which articles should be translated.

Human network - NASDA is an important part of the Japanese

aerospace research community. Therefore, it already possesses the important connections necessary to effectively involve organizations in the information exchange. Hopefully, the new agreement will encourage American researchers to begin building their own networks with Japanese colleagues by making them more aware of their research.

Information scatter - The agreement can do nothing to reduce the scatter of research results in Japan. However, NASDA has the expertise to identify and gather key documents from Japanese government agencies, universities, and private companies. All of these will be brought together in the NASA Aerospace Database, greatly reducing information scatter for American researchers. Another consolidated source in the U.S. for information on Japanese research is the annual publication, Japanese Aerospace Science and Technology (NASA SP-7104).

Document acquisition - By virtue of being in Japan, NASDA is able to gather Japanese documents in a timely and cost-effective fashion. Additionally, it has the important institutional connections necessary to acquire documents not normally distributed to the general public.

Future Cooperation

The NASA STI International Program looks forward to future cooperation to benefit not only the U.S. and Japan, but the entire aerospace community. <

Now Available: SPACE RESOURCES

To order your copy of NASA SP-509, Space Resources,
call the NASA Access Help Desk: 301-621-0390.

PEOPLE IN THE NEWS

Jane Page Honored for Exceptional Performance

Contributed by William Cooper, KSC Library

Astronaut Jay Apt presented a Silver Snoopy Award earlier this year to Jane Page, Library Aide in the Kennedy Space Center Library Documents Department. The Silver Snoopy is not an official award of the Agency, but a memento personally given by the astronauts in appreciation of an individual's superior work. Less than one percent of the NASA workforce is presented with the Silver Snoopy Award. Jane was honored for her exceptional performance distributing Shuttle and Cargo documents, especially launch-critical documents. Jane

continually exhibits exemplary efforts to support the Nation's Shuttle launch team.

Karen Holloway to Chair SLA Conference Committee

Contributed by the STI Program

Karen Holloway, STI Program Office, will chair the Special Libraries Association (SLA) Conference Committee for the 1995 annual meeting to be held in Montreal. The annual meetings are attended by about 5,000 members and exhibitors. SLA is an international professional association of more than 13,500 members who work in special libraries serving corporate, research, government, technical, and academic institutions. <

The Contin. Criticality of STI - An Informal Seminar (cont. from pg. 4)

agencies, and often private sector groups, of foci such as environmental fragility, natural resources, potential disaster conditions, and potential development opportunities.

- Dedicated involvement in the work of the National Research Council's Mapping Science Committee in its continuing development of plans for a coordinated "National Spatial Data Infrastructure," with special attention to the crucial component of geographic information systems (GIS). <

Need to order documents fast? CASI now accepts American Express, Diners Club, MasterCard and VISA to speed your order. Call the NASA Access Help Desk at 301-621-0390 for more information or to order documents from the NASA STI Database.

31st Aerospace Sciences Meeting and Exhibit (cont. from pg. 2)

scientists, engineers, and contractors were interviewed; 650 personnel responded to a questionnaire that was mailed. Hunter also described the NASA STI Program database that was created for current and future analysis of the resulting user demographics, and the results of the survey.

- NASA Access Mechanism—Graphical User Interface Information Retrieval System, by Judy Hunter, Curtis Generous, and Denise Duncan, NASA Headquarters. Hunter described how the NASA STI Program has worked to resolve limitations to access to online information

sources of aerospace, scientific, and engineering data. This access, a mission focus for NASA's STI Program, has always been limited by factors such as telecommunications, query language syntax, lack of standardization in the information, and the lack of adequate tools to assist in searching. The NASA STI Program has developed the NASA Access Mechanism (NAM) prototype, which today offers a solution to these problems by providing the user with a set of tools that provide a graphical interface to remote, heterogeneous, and distributed information in a manner adaptable to both casual and expert users.

- NASA Scientific and Technical Information (STI) Program Multimedia Initiative, by Gladys Cotter and Karen Kaye, NASA Headquarters. Cotter presented the paper, and related the NASA STI Program's experience of introducing multimedia within the STI Program framework. She summarized the challenges the Program faces in initiating its multimedia project, the lessons learned, and the benefits available to users with the introduction of multimedia. Cotter also presented examples of successful multimedia projects. <

**Lewis Research Center Publication
Policy Review (cont. from pg. 6)**

forming a users committee to resolve these problems. This committee could review TISD services for adequacy and appropriateness, act as a liaison between TISD and the user community, help TISD to anticipate future needs and services, and serve as an advocate for funding and equipment.

As the number of public relations and internal publications being generated by the Center increases each year, the time in process for technical reports (without firm deadlines) increases proportionally. The number of formal reports, Technical Papers (TPs), and low-numbered Technical Memorandums (TMs), has decreased; the number of high-numbered Technical Memorandums, presentation papers, and journal articles being published has increased.

Few Lewis authors have a clear understanding of distribution restrictions such as For Early Domestic Dissemination (FEDD), International Traffic in Arms Regulation (ITAR), and Export Administration Regulations (EAR), and the impact of these restrictions on the publication process and distribution of technical documents. Few Lewis authors are aware of the NMIs pertaining to publications and the impact of those regulations. The Editorial Branch has taken on the task of informing Lewis authors about these issues by a series of educational talks, handouts, and one-on-one interviews that help clarify individual questions and issues.

Many of our customers perceive us as being unable to do the job as quickly or creatively as

they can. Years of inadequate funding for staff, equipment, and training have resulted in a perception of out-of-date equipment and a relatively untrained staff attempting to meet an ever-increasing demand in shorter and shorter time frames. More than 82 percent of our respondents still plan to have at least some of their reports processed through TISD.

Not all Lewis publications are being entered into the NASA STI Database because an increasing number of author-prepared/published documents are never submitted to Report Control for entry into that database. Many Lewis authors and managers suggested that the Headquarters approval process be eliminated and the approvals be done at Center level, preferably by the branch chiefs. Comments made in survey responses indicated that many researchers did not understand the approval process or its purpose.

Lewis, Ames, and Johnson report bringing average reports to press in similar times. Langley, Marshall, and Lewis publish similar types of documents and in larger quantities. Ames, Goddard, and Johnson publish similar types of documents in smaller quantities. Lewis edits and prepares text and figures for a wider variety of technical and nontechnical documents. Most Centers no longer or never did prepare and publish Conference Publication (CP) reprints. Other Centers typically require camera-ready copy (requiring no editing, drawing, or other publication preparation). Lead times required for submission of documents for publication preparation vary among Centers and by document type and complexity. Lewis has typically required only a 10-week lead time to edit, prepare, and publish a CP reprint containing full-length presentation papers

with figures included. Other Centers require a 3-month lead time to publish a CP preprint from the camera-ready papers submitted. JPL and Goddard can provide customers with overnight turnaround when necessary because they use outside vendors to handle the workload as required.

From 1986 to 1990 the number of Contractor Reports (CRs) being processed through TISD Report Control has decreased dramatically. The reason seems to be that information that contractors provide to Lewis researchers and managers is often conflicting and unclear. Marshall and Langley have a procedure whereby they ensure that they are receiving all required CRs.

We have presented the recommendations and action items resulting from this study to our directorate head, STI managers at the NASA Centers, and the STI Program Office at Headquarters for their comments. The final version of our publication policy review will be published as NASA TM-106043. ◊

**STAR and NOVA
Now Distributed Monthly**

The frequency of publication of the print versions of *STAR* and *NOVA* has changed from biweekly to monthly. Each volume contains the same information that was previously split between two issues; therefore each volume is larger than before. *STAR* and *NOVA* have undergone some internal changes as well. The size of the type is now 7 point, and the accession number index has been removed from *STAR*.

For frequent updates, you can access SCAN, UPDATES, and MANAGERS (where appropriate) online. In addition, to serve you better, we are now distributing microfiche to all NASA Centers weekly instead of twice a month.

TQM Corner



The following article presents the second of the case studies of Total Quality Management (TQM) projects as presented by Jim Schroer at the October 28, 1992 meeting of the STI Coordinating Council.

Three-Day Turnaround Project

Contributed by Jim Schroer

Total Quality Management (TQM) is a win-win management paradigm. The employees drive the process, the process continually improves, and the product or end result concomitantly improves.

The first step in implementing TQM is to lay the proper foundation. A sense of urgency, of ownership, of commitment, and of trust must be instilled in the team.

Schroer emphasized four aspects of TQM in the model he presented: customer orientation

and customer satisfaction; continuous improvement of the process; metrics, or ways to measure progress; and empowerment of the staff, which in turn engenders commitment and responsibility.

The tangible goal in this case was to establish a 3-day turnaround in document order processing for at least 80 percent of document orders. More important, the goal was to instill a new attitude and a "burgeoning sense of urgency" in the employees.

First a process action team, or tiger team, was formed, and daily meetings were instituted. The team was comprised of a horizontal cross section of all departments involved in processing document orders. The first step was to explain and understand the existing process. Then they identified problems, or barriers to success,

and found that while some were external and beyond their control, others were internal. The third step was to establish metrics—a method of measuring and tracking their accomplishments weekly and even daily. "If you can't measure it, you can't improve it." Using these methods, the team was able to gain better control of the document ordering process and to assume control of a greater number of orders that had been going outside CASI. Increased communication resulted in quick solutions to some of the problems. The huge backlog of orders that existed was eliminated within 2 or 3 weeks.

Lessons learned here were that training in TQM is essential for the necessary culture shift; simple metrics to measure results are enormously helpful; the entire team and some individuals deserve reward (and recognition promotes ownership); communication (again) is crucial to the process; and quality improvement requires hard work. ◇

BOOK REVIEWS



Winds of Change: Expanding the Frontiers of Flight: Langley Research Center's 75 Years of Accomplishment, 1917-1992

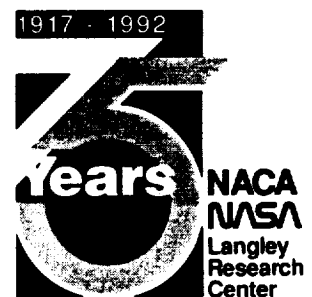
By James Schultz

Washington, DC: National Aeronautics and Space Administration, 1992. 146 p.
NASA-NP-130, 93N11100.
ISBN 0-16-037924-5. Avail. from GPO, \$17.00

Contributed by Ronald L. Buchan

This commemorative volume highlights in pictures and text, 75 years of accomplishments of the NASA Langley Research Center. The introductory matter features wind tunnels and their contribution to the development of aeronautics. A chronological survey details four different periods in Langley's history. The first period, 1917-1939, subtitled "Perfecting the Plane," details Langley's contribution to early aeronautics with examples from specific aircraft. The second period, 1940-1957, focuses on the development of military aircraft during and after World War II. The third period, 1958-1969, tells the story of Langley's involvement with

the newly formed NASA and the satellite and Apollo eras. The fourth period, entitled "Charting New Courses: 1970-1992 and Beyond," treats various new topics such as the Space Shuttle and research spinoffs. Members of the NASA user community will especially want to add this fine volume to their collections. ◇





Rethinking International Cooperation: Recent Literature

Contributed by Danny Luce

This column, the first in a series, will highlight trends in the recent aerospace and information science literature that will be of interest to the NASA STI community. For the first contribution, summaries of three recent articles are offered that share the theme of "rethinking international cooperation."

Blados, Walter R., and Cotter, Gladys A., "An International Aerospace Information System: A Cooperative Opportunity," *Online Review* (ISSN 0309-314x), Vol. 16, December 6, 1992, pp. 359-368.

The authors consider whether emerging conditions may make possible the unification of efforts toward development of an international aerospace database. Computer and communications technology is transforming the role information plays in society within the context of globally scarce resources. The economic value of STI is continually enhanced by today's growth in information technology utilization, interdisciplinary research, and international cooperation. NASA already collaborates extensively with other organizations such as the European Space Agency (ESA). Changes required in the present NASA Aerospace Database (NAD) include expanded subject coverage, rapid delivery of the full text of documents, and improvement in

information retrieval. A proposed agenda for a possible international advisory group could include ways to build on existing international exchange relationships, ways to make the database more current, ways to determine to whom such a database would be made available, and ways to reconcile national needs for proprietary information with international cooperative efforts.

Owen, Kenneth, "Envisioning A World Space Agency?" *Aerospace America* (ISSN 0740-722x), Vol. 31, No. 1, January 1993, pp. 14-15.

A recent speech at the 1992 council meeting of the European Space Agency (ESA) by Edward Leigh, the British government's Minister for Space, is summarized. Owen notes that there is an increasing realization that compromise between the desirable and the affordable will be necessary, inescapably pushing ESA toward greater resource sharing with both Russia and the US. The proposed French-led Hermes manned mini-shuttle craft has virtually been abandoned; instead there will ensue a "reorientation phase" for manned spaceflight. With Russia, ESA envisions definition studies for a future joint space station as well as missions by its astronauts to the existing MIR station. With NASA, ESA will develop the Columbus attached pressurized module (APM) as part of Space Station Freedom. One aim is to pay much of ESA's contribution "in kind" with services such as those of the Assured Crew Return Vehicle. Despite growing pressure on research and development budgets and accelerated European integration, and the

significant reductions in budget projects through 2000, ESA wants to expand activity in Earth observation and preserve European competitiveness in telecommunications and launch systems. Inevitably, Europe's future in space will require wider international pooling of resources.

Pederson, Kenneth S., "Thoughts on International Space Cooperation and Interests in the Post-Cold War World," *Space Policy* (ISSN 0265-9646), Vol. 8, No. 3, August 1992, pp. 205-220.

New global realities may necessitate a redefinition of international cooperation in space. In the past, the cold war provided a defining framework for U.S. leadership, but the "loss of enemy" could also lead to a loss of interest in space exploration, and manned flight in particular. Pederson also notes lowered expectations elsewhere, citing ESA's growing search for partners. On the one hand, the demise of the USSR may make possible expanded cooperation, even extending to the low-cost purchase of the "space assets" of the Commonwealth of Independent States. On the other hand, concerns of international economic competition increasingly tend to supplant the old bipolar space rivalry, forcing America to redefine its traditional "friends and allies" as "friends and competitors." A reassessment of such traditional U.S. cooperative principles as control of critical path items in collaborative endeavors appears likely. The author concludes that the private sector will probably assume enhanced responsibility for shaping space cooperation, while the Government will focus more on evaluating the commercial implications of proposed projects. <

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STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION

FY93 EXHIBIT SCHEDULE

SHOW	PLACE	DATE
Foreign Acquisitions Workshop	National Airport Holiday Inn Crystal City, Virginia	Sept 21-23, 1993
Networld Online Info. Systems	Dallas Convention Center Dallas, Texas	Oct 5-7, 1993
Open Source Solutions	Hotel to be decided Washington, D.C.	Nov. 2-4, 1993
DTIC Annual Users Conference	Ramada Hotel, Old Town 901 N. Fairfax St.	Nov. 1993
Technology 2003 Tech. Transfer Conference	Anaheim Convention Center Anaheim, California	Dec. 7-9, 1993
17th Int'l Online Mtg. Online/CD-ROM Info	Olympia 2 London, England	Dec. 7-9, 1993

STI BULLETIN

A publication for users of the NASA Scientific and Technical Information Program

Vol. 23, No. 2

Summer 1993

The STI Program's 1993 Annual Conference

Contributed by Ardeth Taber-Dudas

A New Approach for a New Agenda

The STI Program's 1993 Annual Conference, hosted by the Langley Research Center (LaRC), was held in Williamsburg, Virginia, May 24 - 28. Attendance topped 170 as participants attended a full week of focus groups, workshops, and panel discussions.

The welcome was delivered by John Stokes, Director of Management Operations at Langley Research Center. Mr. Stokes focused on the challenging activity of technology transfer and proposed two challenges to the audience: one, find new and better ways to communicate with our customers and two, improve the media with which we communicate and look into electronic means of communications. Mr. Stokes closed

his remarks saying he was looking forward to active interchange during the week.

"So Many Opportunities -- It's Overwhelming"

Gladys Cotter, Director of the STI Program in Washington, DC, followed Mr. Stokes' welcome with a Headquarters update. A highlight of this update was the newly established Audio/Video Program. The AV group has been coordinating standards and policies for cataloging and disseminating videos. The first video catalog can be ordered through the NASA Center for Aerospace Information (CASI). Work has started on the preparation of a Report Documentation Page (RDP) to accompany the videos. We have been receiving requests for the videos, and the program is progressing well.

(Continued on page 2)

New Directions for STI Services: Space Station Revisited

Contributed by Irene Shaland

Since a research library is an integral part of a company's operations, we information professionals in the aerospace industry must continue to expand our customer service and look for new directions and opportunities.

These opportunities at the Lewis Research Center Library depend upon a constancy of purpose aimed at enhancing our value to the research community by offering a new, high quality service. For example, when we saw that there was a need at Lewis for foreign language services, we turned interpreting and translating into an integral part of library functions. Our active involvement in Lewis' international cooperation with Russia led to the library playing a key role in one of the most vitally impor-

(Continued on page 3)



Gladys Cotter, Chief of the STI Program Office, HQs, presents the Director's Award to Andrew (Jerry) Hansbrough, Chief, Research Information and Applications Division at Langley Research Center, for his center's efforts in hosting the 1993 conference.

Pictured are, from the left, Cheryl Winstead and Faye Satterthwaite, Conference Coordinators, Jerry Hansbrough, Gladys Cotter, and Thom Pinelli, Assistant to the Division Chief.

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The STI Program's 1993

Annual Conference

(Cont. from page 1)

Ms. Cotter's update included input from the Program's senior staff.

- Jim Erwin, Information Services, was pleased to announce that during the last year the STI Program delivered 750,000 documents and produced 250 technical translations. In addition, the STI Program delivered 98 percent of its 18,000 on-demand document orders within the three-day processing goal.

- Kay Voglewede, User Services, stated that the User Group is developing a charter. Once the charter is in place, the group will be open to all users. The Help Desk function has been streamlined and is operating smoothly.

- The International Department, headed by Tom Lahr, met a challenge to get access to more information. We are developing new relationships with the former Soviet Union as well as other organizations. Detailed discussions have a potential for doubling information from Germany. A major accomplishment was achieved in November, with the signing of an agreement with Japan to acquire the "hard to get" Japanese information. The goals for the International Program this year are to look at the information that is most difficult to acquire, improve coordination with our foreign partner sister agencies and the intelligence community, and make all foreign information available as quickly as possible to the aerospace research community.

The Importance of Technology and Its Transfer

The kick-off speaker for the conference was Dr. Gideon Freider, Dean of George Washington University's School of Engineering and Applied Science. Dr. Freider brings a wide range of academic, research, and professional experi-

ence in computer science, as well a continuing involvement in the national science community.

Dr. Freider spoke on the "Importance of Technology and its Transfer," stating, "Only if there is a use for our technology, is there a reason to develop it."

Focus groups and workshops continued for the rest of the week in the areas of publications, printing, libraries, and graphics. The publications sessions included group discussions of charge-backs, work control, tracking system overviews, online editing and STI Handbook revisions.

During a library session, an update was given on the LaRC library. Discussion focused on budgeting, marketing, and serials costs. A technology panel was held on foreign documents and machine translations.

Graphics staff investigated graphics standards and use of logos, productivity databases, and computer-generated artwork and output.

Attendees were treated to a tour of the Langley Research Center facilities. NASA Langley's unique Aircraft Landing Dynamics Facility (ALDF) is a national test facility for evaluating a variety of aircraft landing gear systems and components under controlled conditions. Unfortunately, the opportunity for a live demonstration was rained out; however, a video presentation allowed for an appreciation of the process.

The tour also took attendees inside the 30- by 60-foot wind tunnel — the oldest operating wind tunnel within NASA. Knowledgeable LaRC personnel guided us through the history of the tunnel and answered questions.

A welcomed addition to the conference was the town hall meeting held by JTT senior staff. Center personnel had an opportunity to raise specific concerns, address various topics, and receive immediate feedback.

1993 STI Annual Achievement Award

The First STI Annual Achievement Award was presented at the Thursday luncheon. The winner of this prestigious award was Donna K. McAllister, Chief, Information Services Branch, Johnson Space Center. Ms. McAllister was honored for dedication to improving the quality and utility of information services to the Center. Her expertise in the use and design of state-of-the-art technology information retrieval systems was integral to its implementation. Ms. McAllister also significantly improved the effectiveness of the available reference services and developed and implemented "satellite" library operations.

"This is an exciting field to work in right now"

During the week people talked about how to improve our services, how modernize our services, and how we see the future. On Friday, Gladys Cotter delivered the official wrap-up, which included three videos depicting visions and concepts of the future. These videos sparked our imagination, providing a vision of the future requirements and capabilities of library information services, graphics and video support, and intelligent interfaces.

Ms Cotter concluded her presentation by relating this week's activities to issues of technology, our specialties, and policy and modernization. Her presentation showed how today's opportunities and challenges makes our field so exciting.

The 1994 STI Annual Conference is planned for May 23-27 and will be hosted by the Jet Propulsion Laboratory. ■■



New Directions for STI Services: Space Station Revisited

(Cont. from page 1)

tant projects in which our Center has ever participated — the Space Station redesign.

Being a Russian-born librarian, I was asked to go to Washington, DC, to work as an interpreter for the NASA Station Redesign Team during the visit of the Russian delegation. Invited by the White House, this delegation came to propose ways that Russia could contribute to the STI Program. Their arrival signaled a new era of cooperation. Now in a situation inconceivable just a few years ago, specialists from the opposite sides of the space race could talk, understand, and appreciate each other. I could visualize the Berlin Wall, which had long become a mental (not just a physical) entity, tumbling down in front of my own eyes.

I realized that the time had come that would show whether we were ready to put the space race behind us and work together or if we would let our efforts be strangled by bureaucracy, whether we were going to turn our country into a world leader in space or into a place of world-class ignorance and pettiness. My role as an information professional and interpreter assumed an entirely different dimension.

As a translator, I translated all the questions prepared by various groups for the technical meetings. For example, just one group, called ECLISS or Ecological Close Life Support Systems, headed by former astronauts Mary Cleeve and Bonnie Dunbar, had eleven single-spaced pages!

As an interpreter, I interpreted during the meetings of a general, introductory character, such as the ones with the White House officials or Brian O'Connor, the head of the Redesign Team, as well as specialty hour-long briefings, such as with the

Mir Utilization group, Docking Systems group, Life Support group, etc.

As a host, I helped "break the ice," to create an atmosphere where the Russians and the Americans, in spite of their incredible non-stop schedule, could understand and appreciate one another.

I facilitated the key proposal from the Russians on utilization of launch vehicle Proton with Space Tug Salyut for the assembly and resupply of the Station.

For the Russian guests, I conducted an extensive tour of Washington, its monuments and museums, trying to make our history understandable, alive, and real.

I have become certain that the boundaries of our profession should continue to expand. We must have a vision of what our business is, what our values are, and of where we are going as providers of scientific and technical information. We must be able to analyze the present state of our business and continue to enhance our professional environment. I have become certain that the quality services we continue to provide to our customer should require flexibility of thought. This is unconstrained by any parameters and is based on openness to possibilities — a freedom of action as a part of creative process.

Only by offering new quality services can we, information professionals, become a visible and vital part of our companies' day-to-day operations.

About the Author

Irene Shaland is a reference librarian at the NASA Lewis Research Center Library. She arrived in the United States in 1982 from Leningrad, Russia. Irene holds a B.A. in theater history from the Leningrad Institute of Theater,

Music, and Cinematography; an MS in electrical engineering from the University of Leningrad; an MA in English from the Case Western Reserve University; and an MS in Library Science from the Kent State University. ■■

New Thesaurus Terms

These new terms are currently available on NASA RECON. Your suggestions for additional new terms are welcome; just call ACCESS, the STI Program Help Desk, at (301) 621-0390.

ADVANCED TACTICAL FIGHTER

Use F-22 Aircraft

ASTRONOMICAL INTERFEROMETRY ATF

Use F-22 Aircraft

CH(METHYLIDYNE)

Use Methylidyne

DATA VISUALIZATION

Use Scientific Visualization

F-22 AIRCRAFT

GRAPHICAL USER INTERFACE

GUI (COMPUTERS)

Use Graphical User Interface

IMAGE CLASSIFICATION

ISRAELI SPACECRAFT

KOLMOGOROV THEORY

KOLMOGOROV-SMIRNOV TEST

LOW GRAVITY

Use Microgravity

METHYLIDYNE

Use Methylidyne

METHYLIDYNE

* MICROGRAVITY

Use For Low Gravity

Reduced Gravity

Subgravity

OPTICAL FLOW (IMAGE ANALYSIS)

REDUCED GRAVITY

Use Microgravity

SUBGRAVITY

Use Microgravity

* Formerly entered under

Reduced Gravity



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listserv@sti.nasa.gov

For additional information:

e-mail: help@sti.nasa.gov
scan@sti.nasa.gov

(Enter this address on the "To" line. Leave the subject line blank and send. You will receive an automatic reply with instructions in minutes.)

phone: 301-621-0390

fax: 301-621-0134

write: NASA Access Help Desk
 NASA STI Program
 NASA Center for Aerospace Information
 800 Elkrigde Landing Road
 Linthicum Heights, MD 21090-2934



Continual Improvement at NASA

Contributed by Joe McElwee and Cathy Horton

NASA has begun to actively implement a formal, agency-wide continual improvement effort using a corporate-wide, top-down approach. Various organizations within NASA have been involved in quality and productivity improvement for years, but now the quality effort is being initiated and led by top management in a systematic, comprehensive manner.

Historical Perspective on Quality

NASA's early quality and productivity efforts were directed primarily toward its contractor community. In the early 1980s, NASA began to sponsor NASA/Contractors conferences and symposia on quality and productivity, and created an award to recognize outstanding contractors. This award, now called the George M. Low Trophy: NASA's Quality and Excellence Award, was the first U.S. quality award. In fact, when the Malcolm Baldrige National Quality Award criteria were developed, NASA's award was used as a model.

In the late 1980s, NASA began to apply Total Quality Management (TQM) in its internal operations. Several NASA field installations were among the first Federal Government organizations to be recognized as prototypes for TQM implementation. NASA's Lewis Research Center in Cleveland, Ohio was recognized in 1989 as a Quality Improvement Prototype (QIP) winner. NASA's Johnson Space Center in Houston, Texas was recognized as a QIP winner in 1990.

NASA Today

Today, NASA Headquarters and all of the field installations are implementing TQM (although we now use the term "continual improvement"). Daniel Goldin, NASA Administrator, has been very outspoken about his personal commitment to the quality philosophy. Upon his arrival at NASA, he established the Office of Continual Improvement (Code T) and named Dr. Laurie Broedling as the Associate Administrator for Continual Improvement. Code T is responsible for coordinating Continual Improvement (CI) efforts NASA-wide. Recognizing the importance of TQM education and training, this office's first priority has been educating NASA's senior management about CI principles and tools.

CI Education and Training for Senior Management

Mr. Goldin arranged a day-long session, held in September 1992, for NASA senior management with Dr. W. Edwards Deming. This session provided a unique opportunity for an extensive discussion of NASA senior management responsibility for managing and optimizing systems for continual improvement with the guidance of the recognized leader in the field of quality. During the past year, most of NASA's senior managers have attended several CI training courses, including a two-day Continuous Process Improvement (CPI) "Boot Camp," a "Principle-Centered Leadership" course by the Covey Leadership Center, and a session by Moshe Rubinstein on creative problem-solving and change. Several senior managers have also attended a four-day Deming seminar. Code T is also sponsoring a CI Educational Series for Senior Managers that brings in high-level government and industry executives to share their CI experiences and lessons learned. The series speakers include Anne

Foreman, Undersecretary of the Air Force; Dan Howard, Undersecretary of the Navy; and William Hayes, President, Texas Instruments Defense Systems and Electronics Group.

Quality Structures

Several quality structures have been developed to support the corporate-wide CI effort. The top level agency-wide quality council, NASA's Quality Steering Team (QST), was established in 1992 to develop quality policy and lead the continual improvement efforts at NASA. The QST is currently writing the NASA CI Implementation Plan. NASA managers are just beginning to realize that NASA is a system, as described by Dr. Deming, and must be managed as such. A second-tier subgroup, the Education and Training Quality Management Board (QMB), was chartered by the QST to develop agency-wide TQM education and training strategies.

A headquarters-level quality council, the Headquarters (HQ) Continual Improvement Council (CIC) has also been established. The mission of the HQ CIC, a structure representing management, is to corporately lead and manage the systems for continual improvement at NASA Headquarters. The Council consists of representatives from all NASA Headquarters codes who cooperatively optimize systems performance at NASA Headquarters. The CIC will help insure that the Headquarters CI efforts are aligned with NASA's overall mission, vision, and values.

TQM efforts are underway at all of the NASA centers as well, with most of the centers having an equivalent of the HQ CIC. Each of the centers has customized its TQM efforts to fit its unique culture. The challenge now is to integrate these different approaches and build a

(Continued on page 7)

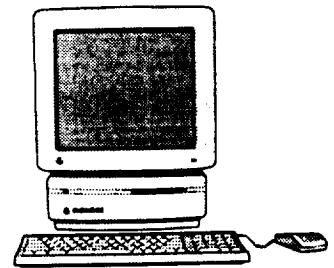
Access SCAN Electronically

To receive detailed information regarding SCAN, simply send e-mail message to **scan@sti.nasa.gov**.

There are three ways to access SCAN electronically: if you are connected to the Internet you may use any or all of the three methods. If you are not connected to the Internet, but are able to send e-mail to Internet addressable machines, then you should use LISTSERV access.

Anonymous File Transfer Protocol (FTP)

Use your FTP program to access the host, **ftp.sti.nasa.gov**; use "anonymous" as your user ID. The /scan/current directory contains the most up-to-date SCAN information. The /scan/archive directory stores all the previous SCAN issues that have been made available electronically. The directory, /scan/current/01/02, contains the files 02-01, 02-02, and 02-03. These represent the SCAN articles for the three aerodynamics subcategories: 02-01 — AERODYNAMIC CHARACTERISTICS, 02-02 — AERODYNAMICS OF BODIES, and 02-03 — AIRFOIL AND WING DYNAMICS. A full list of SCAN TOPICS is available in the /scan/SCAN-TOPICS file.



Gopher

Configure your Gopher program to connect to the Gopher server **gopher.sti.nasa.gov**. This is usually done under a setup or configure option. Check the documentation for the Gopher program you are using.

LISTSERV

LISTSERV is a mailing list program. You e-mail LISTSERV commands and it will perform them. Your e-mail message should contain only commands. For a list of all commands and a list of all the SCAN e-mail lists, send an e-mail message to **listserv@sti.nasa.gov** with the following commands as the message text: **help lists**.

To subscribe to a SCAN e-mail list, send an e-mail message to **listserv@sti.nasa.gov** in the following format:

subscribe LIST Your Name

To receive the SCAN topics 02-01, 02-02, and 02-03 use

subscribe SCAN-02 Your Name

To receive the SCAN topics 02-01 and 02-03 use

subscribe SCAN-02-01 Your Name

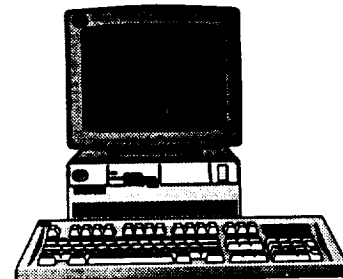
subscribe SCAN-02-03 Your Name

To receive ALL of the SCAN topics use

subscribe SCAN-ALL-TOPICS Your Name

To receive notification of the availability of the new SCAN issue use

subscribe SCAN-NOTIFY Your Name



If you need assistance, please contact the NASA Access Help Desk.

Telephone: 1 (301) 621-0390

FAX: 1 (301) 621-0134

E-mail: **help@sti.nasa.gov**

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common approach for all of NASA, without destroying the structures and initiatives already in place and working at the centers.

The CI Implementation Plan, utilizing the Baldrige Award categories, will assist the organization in achieving a common vision, mission, and values.

NASA's Future CI Efforts

NASA has made much progress since the creation of the Office of Continual Improvement in June of 1992. The infrastructure to support NASA's CI efforts is in place, and many top managers are now trained and ready to provide leadership. Yet, much more remains to be done.

Managers and employees alike are realizing that business as usual is not good enough. NASA is working toward building a critical mass of managers and employees committed to TQM who will continue the continual improvement effort regardless of top management changes.

NASA recognizes that it must foster cooperation within NASA and with its supplier and customer communities. Since almost 90 percent of NASA's budget goes to contractors, it is important to work with our suppliers of hardware, software, and technical assistance to continually improve quality. The Office of Continual Improvement is in the process of redesigning the George M. Low Trophy, NASA's Quality and Excellence Award to encourage and

reward contractors who provide superior quality goods and services and follow continual improvement principles.

NASA's CI efforts encourage managers and employees to become personally involved in making NASA the very best it can be. Continual improvement is just that, continual. It requires that one never becomes complacent, but continually works towards doing better. These changes to the way we manage, work, and produce will take time and incur some up-front costs. Nothing less than a total, cultural transformation must take place; however, the benefits from the transformation will be much greater than the cost. ■■

Center News

NASA STI Database Postings Reach 20 Million

Contributed by Ron Buchan

Most records in the NASA STI Database are indexed to NASA Thesaurus terms. A thesaurus term attached to a record is called a posting. Since 1968, over 20 million postings have been put in place to provide controlled vocabulary subject access to such records. In addition, there are nearly one million postings of NASA Thesaurus terms to the Aerospace Research Information Network (ARIN) records which represent NASA center library holdings. The "old file," covering 1962-67, contains over one million thesaurus term postings, but these are not included in the statistics. Postings for 17,460 terms are roughly distributed as follows: Scientific and Technical Aerospace Reports (STAR) postings - 5,800,000; International

Aerospace Abstracts (IAA) postings - 10,100,000; the Computer Software Management and Information Center file (COSMIC) postings - 781,000; and other postings - 4,100,000. These statistics, as well as postings statistics on individual NASA Thesaurus terms, may be found in the July 1993 issue of the NASA Thesaurus Combined File Postings Statistics. For further information call the NASA Center for Aerospace Information (CASI) at (301) 621-0390.

RECON Replacement Project

Contributed by Linda Hill

As part of an overall five-year plan for modernization of the NASA Scientific and Technical Information (STI) Program, RECON will be replaced with a commercial storage and retrieval software package. This system replacement is a top priority for the STI Program Office over the next two years. A goal of completing the transition by the end of calendar year 1994 has been set.

Broad-based input into the identification of the system requirements has been crucial to this process. The requirements have been incorporated into the Request for Proposal solicitation to commercial vendors of retrieval and database management software. In addition to the requirement that the new system provide, at a minimum, the functionality expected by the user community based on knowledge of existing retrieval systems (e.g., RECON, Dialog, STN, and CD-ROM systems), enhancements in text storage and retrieval are planned to support document images, electronic full-text, and multimedia documents. The vendors will be asked to show that they are able to accommodate evolutionary changes in user interfaces, communications infrastructure, data types, and indexing and query methodologies. Various means of connecting to the new retrieval system will be accommodated, including Internet, SNA, direct dial, and local LAN paths for in-house staff.

There is a parallel analysis and

(Continued on page 8)

Training



NFAIS Courses

The National Federation of Abstracting and Information Services (NFAIS) is an international, not-for-profit membership organization comprising more than 70 leading information producers, distributors, and corporate users of secondary information. Its purpose is to serve the world's information community through education, research, and publication.

1993 Fall Courses:

Technologies and Resources for Database Production

Thursday, October 7, 1993, 9:30 a.m. - 4:30 p.m.
Registration: \$240 (\$195 NFAIS members)

Freelance Indexing

Friday, October 8, 1993, 12:30 p.m. - 5:00 p.m.
Registration: \$75 (\$60 NFAIS members)

Automated Support to Indexing

Thursday, October 14, 1993, 9:00 a.m. - 4:00 p.m.
Registration: \$240 (\$195 NFAIS members)

Train the Trainer

Friday, November 12, 1993, 9:00 a.m. - 4:30 p.m.
Registration: \$300 (\$240 NFAIS members)

Abstracting — The Reality

Tuesday, November 16, 1993, 9:30 a.m. - 4:00 p.m.
Registration: \$240 (\$195 NFAIS members)

Remember, the NASA STI Program is a member of NFAIS, so you can register at member rates.

To register write, call, or fax:

NFAIS
1429 Walnut Street
Philadelphia, PA 19102
(215) 563-2406
Fax (215) 563-2848

AIAA Courses

October: *Fundamentals of Tactical and Strategic Missile Guidance*, October 20-22, 1993, Washington, D. C.; *15th AIAA Aeroacoustics Conference*, October 25-27, 1993, Sheraton Long Beach Hotel, Long Beach, CA; *Theoretical and Computation Methods in Structural Acoustics*, October 28-29, 1993, Long Beach, CA.

Home Study Correspondence Course: Introduction to Aircraft Performance and Design, October 1993 - March 1994. ■■

RECON Replacement Project

(Cont. from page 5)

design effort to develop a new record and file structure for the acquired system. This includes a complete review of the existing file structure, data elements, and retrieval indexes and will result in a conversion plan to move existing data to the new system.

A RECON Replacement LISTSERV discussion group, available through the Internet, has been established for questions, answers, and open discussion of the issues involved in this project. All interested persons can review the discussions and contribute as they wish.

We invite your comments and expertise as this project moves ahead; periodic status reports of its progress will appear in the *STI Bulletin*. You may contact one of the following Project Team members at the STI Program Office (703) 271-5600 if you have questions or comments or would like to subscribe to the RECON Replacement LISTSERV:

Dr. Linda Hill (lhill@sti.nasa.gov),
Gail Hodge (ghodge@sti.nasa.gov),
Karen Holloway (kholloway@sti.nasa.gov),
Harry Needleman (hneedleman@sti.nasa.gov),
Roland Ridgeway (rridgeway@sti.nasa.gov). ■■

Prototype Electronic Publishing System Evaluation

The evaluation of the prototype Electronic Publishing System (EPS) at the Lewis Research Center (LeRC) that began in February 1993 was a success. The next step will be the installation of EPS at the NASA Center for Aerospace Information (CASI) by early November 1993 for an evaluation period of ninety days. The focus of the evaluation will be on the electronic transfer of selected high-numbered Technical Memoranda from LeRC to CASI, replacing the practice of sending hard copy documents. ■■

Outreach Activities of the International STI Program

Contributed by Glenn Hoetker,
Thomas F. Lahr

More than 700 organizations in 50 foreign countries contribute documents to the NASA Aerospace Database. However, many researchers in the NASA research community are unfamiliar with this rich source of scientific and technical information. Therefore, the International Scientific and Technical Information Program devotes considerable effort reaching out to our users.

The International Program's efforts are aimed at both information professionals and aerospace researchers. By making presentations at conferences and workshops, contributing papers to journals, and working with the STI Program's Exhibits team at conferences and trade shows, the Program strives to make researchers aware of the international scientific and technical information easily available to them.

The recent year has been an active one. This column highlights some of the Program's recent outreach activities. Suggestions for other venues to discuss the international activities of the STI Program are, as always, greatly appreciated.

ASIS

At the annual meeting of the American Society for Information Science (ASIS) in October 1992, staff discussed NASA's model of international STI, gathering as part of a panel including representatives from the Department of Energy, Library of Congress, and the National Technical Information Service. Several audience members commented that it was very helpful to know how the various programs interacted.

Open Source Solutions

An explanation of the NASA STI Program, particularly its international information gathering activities, was presented at the Open Source Solutions conference in December 1992. The conference presented an excellent opportunity for the NASA STI Program to share its expertise in gathering information from openly available sources.

NTIS/JICST '93

Staff presented "Japanese Scientific and Technical Information Available in the NASA Aerospace Database" at the Third Annual Conference on Japanese Scientific and Technical Information, sponsored in March 1993 by the Japan Information Center for Science and Technology and the National Technical Information Service. The audience included Japanese and American participants from government and industry, providing the opportunity for very informed discussion of various approaches to, sources of, and challenges in gathering Japanese information. The paper will be included in the conference proceedings.

National Online

In May 1993, staff presented a paper at the National Online '93 Conference in New York City. The paper, "Online Access to Aerospace Science and Technology," detailed the resources the NASA Aerospace Database offers in the international arena and the methods used to gather this information. It also described the STI Program's initiatives for maintaining and expanding the percentage of international information in this database. The paper appears in *Proceedings of the Fourteenth National Online Meeting*. Staff was available at the STI Program exhibit booth throughout the conference to introduce products and services to new users and to answer questions about the program's international resources.

MCC Membership Workshop

At the annual Membership Workshop of the Microelectronics and Computer Technology Consortium (MCC) in May, staff presented "Using the NASA Aerospace Database to Support Research and Development Planning" to researchers and managers from private industry. This conference provided the opportunity to stress the wide applicability of the Aerospace Database beyond pure aerospace into fields such as electronics, engineering, and physics. The presentation will become a MCC Technical Report.

Conferences Outside of the United States

An important part of outreach is to communicate with potential partners outside the United States. STI Program staff presented "Global Change Information Support: A North-South Coalition" at the North-South Online Conference in March in Mexico City. At Moscow's East-West Online Conference in September, staff discussed plans for an International Aerospace Database. STI Program staff were also in Moscow in May for the Information Technology and People conference to present "Modernization and Unification: Strategic Goals for the NASA STI Program."

Conferences and trade shows are also excellent opportunities for the International Program to receive users' feedback. As researchers become increasingly aware of the wealth of information beyond their borders, gathering this feedback will be increasingly important. The International Program staff encourage users to seek them out at conferences and trade shows with comments and questions. In the meantime, please feel free to contact Tom Lahr phone: (202) 358-1398 or e-mail: tlahr@sti.nasa.gov if you have questions or comments on the international aspects of the NASA STI Program. ■■



ARIN System Upgrade

On July 19, the NASA Scientific and Technical Information (STI) Program introduced an upgrade of the Aerospace Research Information Network (ARIN) system. The upgrade includes the newest software release from the ARIN systems vendor, NOTIS Systems, Inc., and the addition of a new software package called the Multiple Database Access System (MDAS). The new MDAS on ARIN permits users to easily access multiple Online Public Access Catalogs (OPACs) or other databases. Initially, the STI Program is providing access to two OPACs: the NASA Libraries Holdings Catalog, called LUNA, and an Early Aviation Catalog, primarily consisting of National Advisory Committee on Aeronautics (NACA) material, called NACA.

Most users of ARIN are familiar with the LUNA catalog; up to now it was the only portion of the ARIN system seen by users. NACA is a new catalog and is the result of extensive cataloging activities by the NASA Center Libraries and the Redstone Scientific Information Center (RSIC) in Huntsville, Alabama. This project, coordinated by the NASA STI Program, starts to bring together the wealth of materials produced during the time of NASA's predecessor organization, NACA. The NACA catalog now consists of reports from the NACA formal series and will be available soon on RECON. The documents may be acquired from the listed holding library or may be purchased from CASI. For additional information on the NACA project or on ordering NACA documents from CASI, please phone the NASA Access Help Desk at (301) 621-0390, or e-mail your request through the Internet at help@sti.nasa.gov.

New Software Release

The newest release of the NOTIS system software provides numerous enhancements, most of which are not visible to the user community. However, one noticeable change is the introduction of Common Command Language in the OPACs. Common Command Language is a standard that has been established by NISO to standardize the commands computer systems. Use of Common Command Language in ARIN helps eliminate the necessity for users to be versed in several unrelated command languages.

Another feature of the new NOTIS release, to be activated later, is called Location-Based OPAC Displays. Location-Based OPAC Displays will permit ARIN users located at specific centers to highlight the selected titles that are at their center libraries.

Future ARIN Upgrades

Future enhancements include activating the acquisitions and serials controls modules to improve the ordering and collection management capabilities of the NASA libraries, introduction of an Inter-Library Loan capability between the NASA Center Libraries, and the addition of other catalogs through MDAS.

The STI Program works with the NASA Center Libraries to enhance the ARIN system to provide better library and information service to the NASA and aerospace communities. The ARIN Steering Committee, composed of head librarians from each of the Center Libraries, provides the input and direction for the ARIN system. ARIN system users are encouraged to contact their center library staff or the CASI User Services staff with suggestions or questions about ARIN. ■■



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Or use the Internet to learn more about the program,
help@sti.nasa.gov.

NASA Adopting ISO Standards for Transliteration of Slavic Cyrillic Characters

Contributed by Jennifer Garland

As of 1 July 1993, NASA has adopted the ISO standards, as modified by IAEA/INIS, for the transliteration of Slavic Cyrillic characters. Since there will be no retrospective changes to the NASA RECON database, searching after the 1 July must use three different strategies to achieve the maximum number of citations: (1) AIAA documents, input prior to 1 July, will need to be searched using the Library of Congress standards; (2) CASI issued documents, input prior to 1 July, will need to be searched using the US Board on Geographic Names standards; and (3) documents issued after 1 July (issue 16 of STAR), by both AIAA and CASI, will require searching by the ISO standards.

The switch to this ISO transliteration standard will affect input on languages that use the Cyrillic alphabet: Russian, Bulgarian, Serbian, Ukrainian, Macedonian, Byelarussian, and Moldovan. The new standard is available as Appendix 7, Rules for Transliteration of Selected Non-Roman Characters (Table A7.1. Transliteration of Slavic Cyrillic Characters, Table A7.2. Transliteration of Greek Characters) of the U. S. Department of Energy Office of Scientific and Technical Information's *Guide to Bibliographic Description*, September 1992. This Appendix 7 replaces IAEA-INIS-10 INIS: *Transliteration Rules for Selected Non-Roman Characters*. Additional transliteration standards will soon be adopted program-wide for other languages, such as Japanese and Chinese. Watch for future updates on these new standards. ■■

The following table shows the different transliteration standards for Russian characters that appear on RECON. Those transliterations which are affected by the change to the new standard are presented in **bold**.

RUSSIAN CHARACTER	OLD AIAA STANDARD	OLD CASI STANDARD	NEW NASA STANDARD
А, а	A, a	A, a	A, a
Б, б	B, b	B, b	B, b
В, в	V, v	V, v	V, v
Г, г	G, g	G, g	G, g
Д, д	D, d	D, d	D, d
Е, е	E, e	Ye, ye	E, e
Ж, ж	Zh, zh	Zh, zh	Zh, zh
З, з	Z, z	Z, z	Z, z
И, и	I, i	I, i	I, i
Й, й	I, i	Y, y	J, j
К, к	K, k	K, k	K, k
Л, л	L, l	L, l	L, l
М, м	M, m	M, m	M, m
Н, н	N, n	N, n	N, n
О, о	O, o	O, o	O, o
П, п	P, p	P, p	P, p
Р, р	R, r	R, r	R, r
С, с	S, s	S, s	S, s
Т, т	T, t	T, t	T, t
У, у	U, u	U, u	U, u
Ф, ф	F, f	F, f	F, f
Х, х	Kh, kh	Kh, kh	Kh, kh
Ц, ц	Ts, ts	Ts, ts	Ts, ts
Ч, ч	Ch, ch	Ch, ch	Ch, ch
Ш, ш	Sh, sh	Sh, sh	Sh, sh
Щ, щ	Shch, shch	Shch, shch	Shch, shch
Ъ, ъ	" , "	" , "	" , "
Ы, ы	Y, y	Y, y	Y, y
Ь, ь	' , '	' , '	' , '
Э, э	E, e	E, e	Eh, eh
Ю, ю	Iu, iu	Yu, yu	Yu, yu
Я, я	Ia, ia	Ya, ya	Ya, ya

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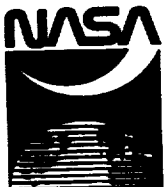
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Washington, DC 20546-0001



STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION

FY93/94 EXHIBIT SCHEDULE

SHOW	PLACE	DATE
Technology 2003	Anaheim Convention Ctr.	
Tech. Transfer Conference	Anaheim, California	Dec. 7-9, 1993
17th Int'l Online Mtg. Olympia 2		
Online/CD-ROM Info	London, England	Dec. 7-9, 1993
32nd Annual AIAA	Hilton	
Conference	Reno, Nevada	Jan. 10-13, 1994

STI BULLETIN

A publication for users of the NASA Scientific and Technical Information Program

Vol. 23, No.3

Fall / Winter 1993

Moving towards International Standardization: NASA STI Program Romanization Standards

Contributors:

Jennifer Garland, Coordinator, Foreign Literature Services and
Glenn Hoetker, International STI Program Analyst

International standardization has been receiving increasing attention throughout government and industry. Romanization is the representation in Roman script of languages that use non-Roman alphabets. Within the NASA STI Program, international standards for Romanization have taken on increased importance as the amount of information gathered from countries such as Russia, Japan, and China, all of which use non-Roman writing systems, has increased.

As a general policy, the NASA STI Program is adopting the International Organization for Standardization (known as ISO) standards for transliteration, in an attempt to simplify searching in the NASA STI Database, which receives input from multiple domestic and international sources. The ISO standards for each language requiring transliteration will be reviewed to determine the accuracy and universality of the standard. If appropriate, a decision may be made to depart from the ISO standard in the case of a specific language.

Recently the STI Program reviewed transliteration standards for two complex languages of steadily increasing importance, Chinese and Japanese.

Chinese

There are several widely-used transliteration methods for Chinese, so the Program carefully examined the advantages and disadvantages of the ISO standard (ISO 7098:1991(E)). The standard corresponds to the *pinyin* transliteration method and offers many advantages in addition to being an international standard. Widely used and taught worldwide, *pinyin* is also the official standard of the People's Republic of China, the largest publisher of Chinese-language scientific and technical information. Therefore, the STI Program decided to adopt the ISO standard.

(continued on page 2)

NASA Access Mechanism (NAM) Receives Publicity

Contributed by: Denise Duncan

The NASA Scientific and Technical Information (STI) Program project, the NASA Access Mechanism (NAM), has received an enthusiastic reception from users and has gained media attention.

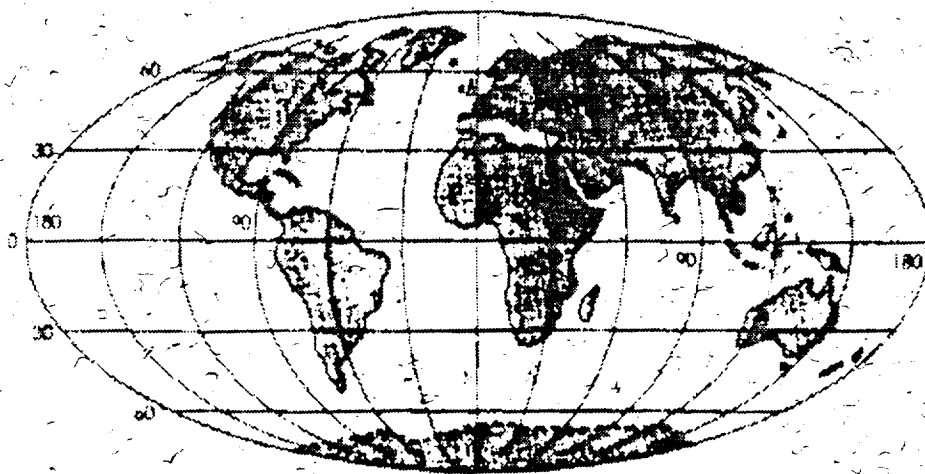
The NAM prototype was fielded to demonstrate an alternative information dissemination mechanism, to collect feedback from the testers, and to produce a Lessons Learned document. The feedback was positive, and the Lessons Learned report is now in draft. And, because of media publicity, NAM has gathered attention from people outside the beta test community.

(continued on page 8)

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- 5.....International
- 7.....People in the News





Moving towards International Standardization: NASA STI Program Romanization Standards

(continued from page 1)

Japanese

Although the STI Program strives to follow ISO standards whenever possible, there were serious concerns about the ISO standard for Japanese (ISO 3602:1989(E)). The standard corresponds to the *kunrei* system, promulgated by the Japanese government. However, the Modified Hepburn, transliteration system, currently used in the NASA Aerospace Database, offers significant advantages over the ISO standard. The Modified Hepburn system is more widely used in Japan and throughout the world, including in databases such as the International Nuclear Information System (INIS) database and the National Space Development Agency of Japan's AIRS systems. Modified Hepburn is also the most likely to yield a correct pronunciation or spelling when used by a non-Japanese speaker.

Therefore, it was decided to adopt the Modified Hepburn system for transliteration of Japanese, rather than the ISO standard.

Any additional exceptions to the policy of using ISO transliteration standards will be announced as determined by the program.

Outreach

STI USERS GROUP BEING FORMED

Contributed by: Karen Holloway

To enhance the flow of information between users and the STI Program, an STI Users Group is being formed. It will be a means for users to have direct input into the development of new STI products and services, as well as a mechanism to gather suggestions and comments on current products and services.

In the fall of 1992, a Steering Committee of NASA STI end users was formed to lay the groundwork for the group and explore methods to communicate with and involve STI users. During the past nine months two projects, one on Foreign STI Translations and the other on Information Retrieval/Document Relevance, were undertaken using prototype project groups to determine if this type of structure will work for the STI Program.

As a result, two types of groups will be used to gather input from users: Discipline Groups and Project Groups. Discipline Groups will provide input to the STI Program based on discipline-related issues, for example, scope and coverage of the STI Database; Project Groups will provide input on project specific topics, for example, database-user interface or full text retrieval.

Initially, a select STI Users Group is being created from which the sub-groups will be created as needed. Those who have been part of recent evaluation projects as well as frequent users of the STI Database and other NASA STI services will be invited to participate in future projects. The role of a "select user" will be one of an ad hoc user representative for specific projects where user input is needed. Regular and frequent communications with the select STI Users Group will be accomplished through Internet Listserv, monthly news bulletins, and action polls when reactions to specific issues are needed quickly. Projects and communication with the group will be coordinated by the STI Program User Services function.

If you are interested in participating in NASA STI product evaluations and becoming part of the select STI Users Group, contact Lou Ann Scanlan at the STI Program Office, lscanlan@sti.nasa.gov, 703.416.5619.

Library Visiting Committee Conference

The Goddard Space Flight Center (GSFC) invited a Visiting Committee to conduct a comparative review of its library services and to determine the level and scope of services required to achieve and assure continued excellence in support of a research institution of Goddard's caliber. The Committee included representatives from peer institutions including NOAA, MIT, the California Institute of Technology, the National Institute of Standards and Technology, and the Naval Research Laboratory, Purdue University, as well as practicing researchers. The committee investigated several specific issues regarding the Library program and presented their recommendations to the Center's Institutional Planning Committee.

1993 Library Colloquium

The Goddard Library Colloquium featured keynote speaker Dr. Elizabeth Aversa of the Institute for Scientific Information who spoke on "Uses and Abuses of Citation Analysis: Does it Measure Scientific Value?" Dr. Aversa discussed the merits and limitations of using citation analysis as a measure of the impact of scientific research.

Dr. Aversa's talk included an update of GSFC data used in a 1990 *Science Watch* article on publication productivity and citation rates for NASA centers. The update indicated that there has been an increase in citation rates for Goddard papers. Moreover, Goddard has produced a number of "high impact" papers - those cited most frequently across all disciplines - following recent successful missions/ experiments, such as the Cosmic Background Explorer (COBE) and Total Ozone Mapping Spectrometer (TOMS). Colloquium attendees included GSFC scientists, representatives from NASA Headquarters, and colleagues from several local science and technology libraries.

Poster Session on the GLOBAL System

The GSFC Library Services Branch gave a poster session on the Goddard Library Online Bibliographic Access Locator (GLOBAL) during the 1993 Annual Conference of the American Library Association. The GLOBAL system assists library patrons in identifying and locating library materials and provides online access to library databases including CD-ROM databases, ARIN and RECON. The poster depicted each screen as the user progresses through the system.

The poster session generated a great deal of interest in the GLOBAL system from information professionals throughout the United States.

The Goddard Library Welcomes a New Staff Member

The Goddard Library is pleased to welcome Paul Baker to the staff as the Management Analyst of Information Technologies. Mr. Baker has already contributed greatly to NASA during his assignments as a participant in the Presidential Management Intern Program. These assignments included working with the GSFC Library, the Local Area Network Support Group, Mission to Planet Earth, and the International STI Program.

The Third NASA Foreign Acquisitions Workshop:

Acquisition of Gray Literature

Contributors:

Thomas F. Lahr, NASA STI Program, International Department and Bonnie C. Carroll, Information International Associates

In 1991, the National Aeronautics and Space Administration (NASA) organized its first inter-agency workshop to exchange information on access to and acquisition of foreign scientific and technical information. The third NASA Workshop was held September 23-25, 1993. Sponsorship was expanded to include the Foreign Aerospace Technology Center at Wright-Patterson Air Force Base (now known as National Air Intelligence Center (NAIC) and the Open Source Coordination Office in Washington, DC. There were over 230 attendees, representing about 100 organizations, including government agencies, universities, businesses and industries as well. There were 57 speakers representing U.S. domestic, foreign, and international organizations in an attempt to share information about what we have to offer one another. At this year's meeting, there were a number of key themes that captured the issues in access and management of gray literature.

Gray literature is easier to describe than it is to define

A number of speakers gave definitions of gray literature. However, most of the definitions were based on characteristics of this type of literature, for instance, that it is difficult to locate and is not published through regular or commercial channels.

Pink literature

Literature is talked about in terms of gray. One can view information that is not accessible as being black and fully accessible information as being white. The color analogy was made to take into account the fact that information is purposely withheld because of security, privacy, or classification reasons. For that which does not fall in a legally withheld or red category, but is not released (white), the new genre of pink information was created.

Free information versus freely available information

The theme that information that is "freely available" is not the same as "free information" was significant for improving access to gray literature, especially in the context of government information.

"Just in time" versus "just in case"

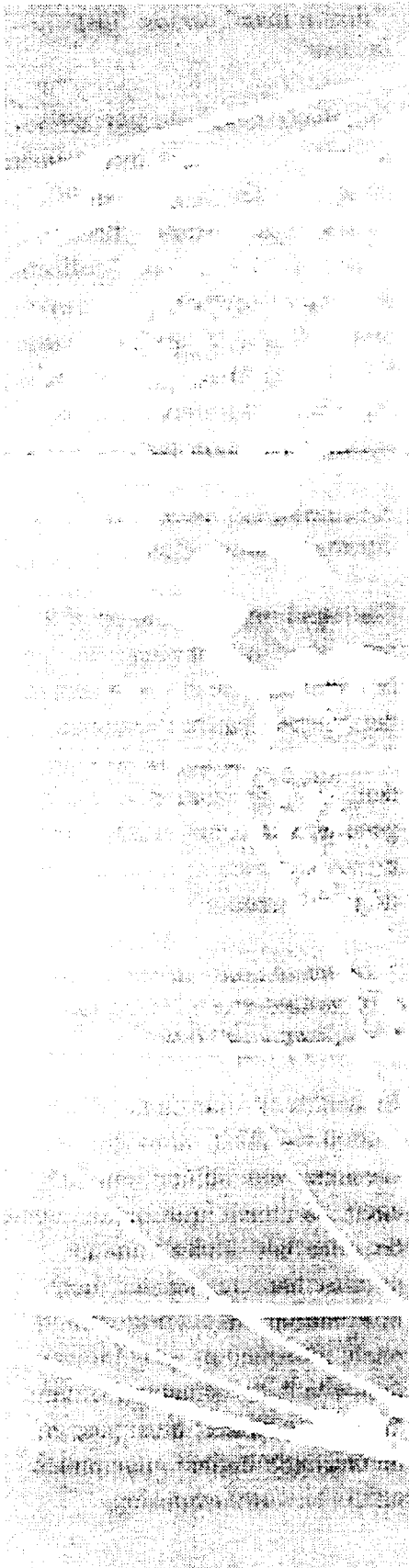
In today's economic and technological environment, management must consider "a just in time" versus "a just in case" modus operandi. The notion of collecting everything, including the grayer material "just in case", is giving way to the procedure of identifying where information may be obtained when needed.

Networked information is not a linear extension of print

The rapid implementation of a networked information world and, in particular, the development of the Internet, has had dramatic impact on what is and how we deal with information access in general, but is particularly interesting as we address the concept of gray literature.

"Too much data but not enough information or are we trying to drink from a fire hose"

Related to the questions of information overload, about half the speakers were talking implicitly about too much information, while the other half spoke from the premise that they needed more information. In a world with too much information, gray information which, by its nature, is more difficult to access, must pass an increasingly higher value threshold to be worth acquiring.



Networking can be personal

A major point was made that one of the most positive outcomes of the workshop was the opportunity to network with the other people at the conference.

One person's "gray literature" is another person's "white papers"

Another point with regard to networking and interpersonal communication that was duly noted was that one group's gray literature may be another group's "white papers." In a more general sense, libraries, database producers, information brokers, and end users all have their own standard sources for information and these are not considered gray. However, when one actor tries to trace another's sources, they venture into what might seem gray areas to them.

Having information doesn't mean understanding information

The issue of cultural diversity and cultural awareness was very evident in a number of talks. This is especially important in understanding some of the less traditional information sources. It was pointed out that if one understands the people, the culture, and the context in which the information was produced, then one gets more and perhaps even different meaning from it.

Main Topics in the Acquisition of Gray literature

In addition to themes running through the meeting, the Workshop was divided into nine broad areas.

- Scope and Value of Gray Literature
- New Thrusts in Open Source Activities
- Specialized Sources of Foreign Gray Literature
- Foreign Sources of Foreign Gray Literature
- Intellectual Property Issues in Gray Literature
- Federal Agency Update: Focus on Foreign Gray Literature
- A Session with Experts in Searching and Sources of Foreign Gray Literature
- New Techniques and Technologies for Access and Evaluation
- Where Do We Go from Here?

If you would like more detailed information, a notebook of abstracts and speakers notes was compiled. Although it's gray, and will not be formally published, it is available for the cost of reproduction. For more information about the meeting or to obtain a copy of the notebook, please contact:

Foreign Acquisitions Workshop
NASA STI Program
Code JTT

PEOPLE IN THE NEWS

The 1993 NASA Headquarters Honor Awards Ceremony

Contributors:

Jackie Streeks and Ardeth Taber-Dudas

The NASA Headquarters Honor Awards Ceremony was held on October 5. Mark Hess, Public Affairs Officer, Office of Space Flight, read the citations as John R. Dailey, Acting Deputy Administrator, presented the awards.

Gladys Cotter, Director of the NASA Scientific and Technical Information Program, received the Cooperative External Achievement Award for changes she implemented to improve the operation of the STI Program and to support the Agency-wide requirements for STI.

Ms. Cotter improved the communications infrastructure among the NASA STI Program, the NASA field installations, and the NASA program offices by establishing a section responsible for interfacing with the NASA field installations and with the NASA program offices. In addition, a Center Coordinator was established as a single point of contact between the NASA field installations and the HQ STI Program office and its processing centers.

To measure customer satisfaction, a monthly user evaluation form was established as a vehicle for the NASA field installations to submit complaints, suggestions,

and praise for events that occurred during the reporting period. The NASA field installations are now more active participants who not only feel they have a voice in the decision-making process, but also feel someone is listening to what they have to say.

The Program Outreach effort is involved with collecting and defining the requirements for information of the NASA Program Offices and providing support as needed. As part of Program Outreach, User focus groups were established to participate in product/service evaluations and redesigns. The focus groups include representatives from the NASA field installations as well as from the NASA Program Offices. This field installation/program office involvement has resulted in cost savings by eliminating products, services, and system enhancements which do not meet user requirements. Because of Ms. Cotter's efforts to involve the field installations and program offices, the NASA-wide STI Program is now more cohesive and has developed a positive "team spirit" with a "can-do" attitude.

Special Service Award - Center for AeroSpace Information (CASI) Customer Services

Four individual teams from CASI were collectively awarded a Special Service Award for their contributions.

Input Processing Development

The Input Processing Development Team designed and implemented a system that provides data to the Input Processing System for the STI Program's Canadian partners. The Canadians, Europeans, and Japanese have demonstrated a high level of interest in the system.

National Advisory Committee for Aeronautics (NACA) Document Preservation Team

The NACA Document Preservation Team lead by Dr. Linda Hill is responsible for ensuring that the historic NACA documents collection is preserved and remains available to NASA, universities, and the aerospace industry.

The NACA Document Preservation Team organized an inter-center, inter-agency effort to identify, catalog, and index seminal aeronautical information generated under NACA auspices from 1915 to 1958. These classic documents, as a result of the NACA Document Preservation Team's efforts, are now available on the NASA Scientific and Technical Information (STI) Database through RECON and on the NASA Aerospace Research Information Network (ARIN). By locating the NACA documents and providing on-line searchable information about their contents

and physical location, the NACA Document Preservation Team has ensured that this national aeronautical treasure will not be lost to future generations of scientists and engineers.

Three-Day Turnaround

The Three-Day Turnaround team was recognized for successfully achieving and maintaining a level of performance for document turnaround never previously attained at CASI. The team has, for twelve consecutive months, completed over 97 percent of all document orders received at the NASA Center for Aerospace Information within three days. Code JTT, long interested in document delivery turnaround, has expressed appreciation for the total effort CASI staff put forth to make a three-day turnaround document delivery window a reality.

Micrographics

The Micrographics Team implemented the capabilities of the DataMaster II microfiche duplicator. The team re-engineered the microfiche duplication and distribution process into one flow rather than three, implemented a batch duplication process, and modified the microfiche delivery schedule. The new process has increased productivity and improved delivery by an average of 11 days.

Team participants sharing the Award are:

Rhonda Benning, Charles Brown, Minghui Chao, Carl Collins, Theresa Dixon, Deborah Drumheller, Simon Dukstansky, Robert Egge, Robert Ferris, Susan Floyd, James Funk, Kenneth Grandison, Jonathan Grant, Barbara Henry, Betty Houston, Karen Huguley, Taylor Hutt, Delores Johnson, Michelle Kadziel-Uber, Jirair Khatcheressian, Mikhail Kreymer, Clarence Lee, Phillip Liebes, Nancy McAfee, Scott McKelvie, Odania Merritt, Darnell Miller, Thelma Mosley, Caprice Newman, Patraicia Piraino, Claire Redmon, Wayne Ross, Abid Sadiq, Delveeta Scarborough, James Schroer, Sylvia Shan, Michael Shapiro, June Silvester, Charles Sorrell, Jacqueline Streeks, Robert Thurston, Maxine Tucker, and Doris Wahl.

NASA STI CONFERENCE

1994

Traveling Toward the Year 2000: the Road Ahead for STI.

HOST

The Jet Propulsion Laboratory will host the 1994 STI Conference on May 23-27, 1994, in Pasadena, California.

TO

Special emphasis will be placed on the Focus Group discussions, which tentatively include Library, Publications, Graphics, Printing, Photography, and Archives/History Groups. A tour of JPL will be given. A general announcement for the meeting was mailed in October to survey the NASA Centers about topics for discussion during the conference. This initial mailing will also attempt to gain information about the number of potential attendees to expect.

JPL

More information will be forthcoming as plans are finalized.

NASA Access Mechanism Receives Publicity

(continued from page 1)

As a result of an article appearing on the front page of the May issue of *Government Computer News*, the STI Program began receiving inquiries, primarily from other Federal Government agencies. In early July, *Computerworld* published an article providing an electronic mail address for further information. That mail address received over 250 inquiries during the following weeks. These inquiries came from federal agencies, universities, governing bodies inside and outside the U.S., and firms seeking to commercialize the software. It seems that the boom in the growth of the Internet has created a large demand for tools that make the Internet easier to use.

Over the summer, NAM demonstrations were requested by many organizations and provided primarily to agencies with whom the STI Program could collaborate. The NAM was presented to staff in the U. S. Army, Central Intelligence Agency, National Security Agency, Office of Naval Intelligence, the Office of Science and Technology Policy in the Executive Office of the President, and task force members of the National Information Infrastructure. Internally, presentations were made to NASA's EOSDIS project office and staff working on the HPCC initiative. A recent article in

Internet Research prompted an offer of collaboration from a university/industry team working in the digital libraries area.

All this interest from the larger community is exciting, but we are still focusing on our users at home. We would welcome participation from the NASA Center libraries and STI staff.

If you wish to receive more information on the NAM, please contact the NAM team by sending email to NAM@sti.nasa.gov.

New Thesaurus Terms

These new terms are currently available on NASA RECOIN. Your suggestions for additional new terms are welcome; just call ACCESS, the STI Program Help Desk, at (301) 621-0390

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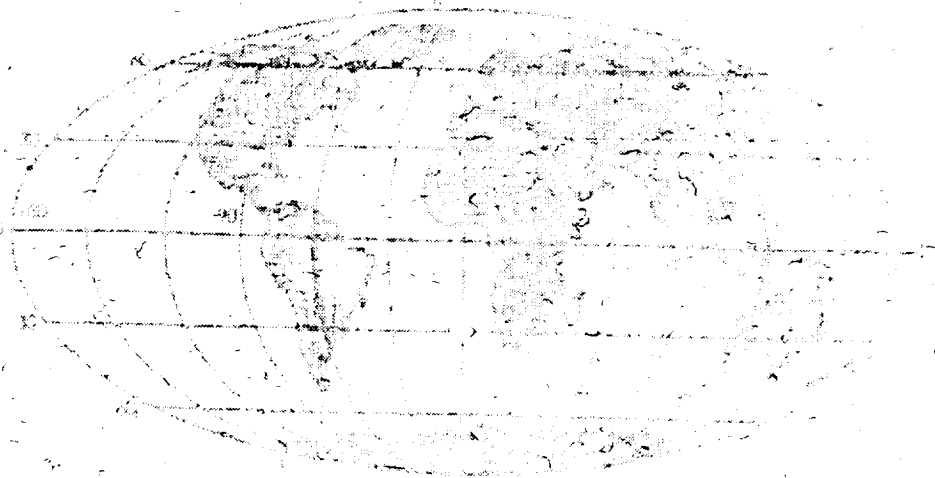
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1994

STI BULLETIN

A publication for users of the NASA Scientific & Technical Information (STI) Program

Vol. 24, No. 1 • Spring 1994

Astronauts Draw on Skills of Graphics Services at Johnson Space Center (JSC)

Contributed by Ron Sepic, NASA STI Program

Consider what the eagle is to America, the lion is to courage, and scales are to justice. They're all symbols . . . and while their power may be hard to explain, it's easy to recognize.

Perhaps eight times per year, Graphics Services of JSC's Management Services Division faces the formidable task of helping to shape a NASA symbol — the patch that exemplifies each Shuttle mission.

"Mission patches do a lot," says Astronaut Kevin Chilton, veteran of STS-49 and pilot for STS-59, the Space Radar Laboratory mission, scheduled for 1994. "They help give the crew an identity, motivate our NASA colleagues, and serve as an emblem of our mission to the media and the public at large. That's quite a job."

New mission patches are sewn onto astronauts' flight suits and velcroed onto their orange launch and entry suits. The patches also appear on each official crew photo, every mission publication, and sometimes turn up in locations that are only slightly less predictable.

"A few months back I was in Korea making a speech to Young Astronauts International," says Astronaut Rich Clifford, a member of the STS-53 crew and a mission specialist, also slated for STS-59. "NASA mission patches were everywhere. It was great."

Typically, work on a mission patch begins with a brainstorming session among the crew. Sometimes even crew family members get involved.

When work began on the STS-53 patch, Clifford took home a preliminary sketch and showed it to his eight-year-old son, Brandon. "Much to my surprise, two hours later Brandon presented me with a drawing that evolved into our finished mission patch," says Clifford.

After reviewing basic crew drawings, Graphics' patch production process begins, but not as in days gone by, when patch designs were produced by hand on a graphics board. It was a time-intensive process in which colors were added individually and layers of paint were routinely applied throughout several areas of the patch.

Starting about three years ago, Graphics Services cut costs and greatly accelerated production by turning to state-of-the-art computer graphics. Now, as then, the group's graphic artists take the basic drawing and transform it into a digital image they can manipulate more quickly and easily than ever before — often with just the click of a button.

Of course, Graphics Services continues to provide the astronauts with succeeding generations of the patch, with selected elements, shapes, and colors altered as

continued on page 2

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The patch for STS-53 shows the Space Shuttle Discovery rising to new achievements as it trails the symbol of the Astronaut Office against a backdrop of the American flag.

(continued from page 1)

needed. Each iteration is followed by another until the astronauts are satisfied with the results. Then it's on to JSC senior management and Headquarters for final approval.

Another Graphics Services innovation: now, one person in the Astronaut Office is selected as spokesperson for each mission patch. With only one contact point, communication between Graphics and the very busy flight crews is streamlined further still.

Do the astronauts notice the improvement? "It seems everything with the patches proceeds like clockwork," says Chilton.

That doesn't mean the astronauts don't prefer some patches over others. For instance, Rich Clifford says, "I'm really pleased with our patch for STS-59. But if I had to choose a favorite, it would be the one sketched out by Brandon." ■

STI Bulletin

National Aeronautics and Space Administration
Scientific & Technical Information
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Washington, DC 20546-0001

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Designer: Paula Trott

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NASA STI Program Adds Videos to Its Palette

Contributed by Pat Curran, NASA STI Program

Nineteen ninety-four is the year that the NASA STI Program's Video Project swings into full gear with a campaign to make the aerospace community aware of the availability of an exciting new information resource — NASA videos. This new service is the result of over two years of work by the STI Program to create a central repository for NASA and aerospace related videos. For over thirty years, NASA has been documenting NASA research and achievements with spectacular spacecraft and aviation footage on film and in videos of the highest quality; now these productions are available to aerospace researchers and enthusiasts worldwide.

The NASA STI Program video collection was created in response to the growing reliance on non-print media by researchers as a means of communicating ideas and data. The collection also reflects the fact of the broad-based appeal of NASA's work, and the effectiveness of the video medium in transmitting scientific, technical, historical, and experiential information.

The idea of a centralized distribution point for NASA videos was first presented to the NASA video community at the 1992 NASA-wide Audio-Visual Conference in Huntsville, Alabama. The group enthusiastically accepted the concept and agreed that the NASA STI Program was in a unique position to provide this exciting resource to the widest possible audience. The NASA STI Program staff has been working closely with the Headquarters Office of Public Affairs, which had previously compiled a partial listing of NASA-produced videos, and with each Center's video producers to put together an initial cross section of the most popular and visually captivating video titles. These make up the core of the video collection, and the content of the first video catalog published in 1992.

The NASA STI Program staff, in collaboration with video producers, public affairs officers, and librarians across the country, has its collective detective hat on to face the challenge of ferreting out all of these valuable productions from a myriad of production and storage facilities. The Centers have agreed to submit new videos as they are produced, so that the collection remains current and addresses researchers needs of the moment, a characteristic the NASA STI Program Database is recognized for. The NASA STI Program video storage facility was designed to accommodate the huge volume of untapped videos that are currently located throughout all the NASA Centers and at various organizations within each Center. As the size and depth of the collection comes to reflect that of NASA research, we will also explore the addition of scientific and technical videos from different agencies and research organizations from around the world. The potential size and value of this resource is therefore incalculable.

There are a number of ways to access this new resource. The NASA Video Catalog contains a listing of over 300 popular NASA titles. The catalog records the title, production date, producing Center, and running time of each video and gives a short description. Videos range from historical and educational programs to in-depth recordings of research data, images, and computer modeling. The videos cover the wide span of subject matter and disciplines addressed by NASA researchers. The NASA Video Catalog also includes removable ordering forms and information on ordering by phone and fax. NASA videos can also be searched for and ordered online via NASA RECON. Videos are available in a variety of consumer and professional formats, the two most popular being VHS (consumer) and Betacam SP (professional), for as little as \$9.00 per title. Videos are available in the American broadcast standard, NTSC, as



well as foreign broadcast standards like PAL and SECAM. The NASA STI Program strives to fill each request in a three-day turnaround time frame.

Members of the aerospace community have already expressed much interest in this new service of the NASA STI Program. And a number of requests for videos in various consumer and professional formats have already been received from researchers and aerospace enthusiasts around the country. In addition, video producers are interested in the spectacular footage presented in many of the videos. ■

This display, sent to all the NASA Center libraries, promotes the celebration of the Apollo 11 Mission Highlights and the free NASA Video Catalog.

"... visual documentation of NASA's scientific and engineering research and development — in a format that let's you "relive" (these) events."

It's Time to Talk

Contributed by Ardeth Taber-Dudas, NASA STI Program

"We are who we are. We do what we do. And what we do is important and has lasting value."

Primary and Secondary Publishers: It's Time to Talk was the title of the 1994 Annual Conference of The National Federation of Abstracting and Information Services (NFAIS). The conference, held at the Ritz-Carlton Hotel in Philadelphia, February 28-March 2, brought together key representatives from the primary and secondary publishing communities. The sessions on the agenda were *The Evolving Marketplace, What the Marketplace Wants, Distribution Issues, Copyrights and Permissions, Content Issues, Specialized Issues, International Copyright Developments, and Navigating the Internet*.

Miles Conrad Memorial Lecturer

A feature of the NFAIS Conference was, as always, the *Miles Conrad Memorial Lecturer*. The Miles Conrad Memorial Lecturer award was established in 1966 in honor of G. Miles Conrad, an NFAIS founder and the Federation's first president. The award recognizes outstanding contributions to the field of abstracting and indexing as well as innovation and leadership in the areas of information science, information technology, information services, and information dissemination.

The 1994 Miles Conrad Lecturer was **Ronald G. Dunn**. Mr. Dunn joined Macmillan, Inc. in 1990 as Group Vice President and is responsible for the Macmillan Publishing Company. Prior to joining Macmillan, he was with the American Chemical Society (ACS), where he developed business plans for the CAS ONLINE service. He is widely known in the publishing and information business and has served as NFAIS President.

Angst & Anticipation

Mr. Dunn's lecture *Angst & Anticipation — How Will We Fit in the New Information Age?* began with a confession that he

never met Miles Conrad; however, having known and worked with several former Miles Conrad lecturers, he concluded that he must have been a truly special person with distinctive leadership and vision.

Medium is NOT the Message

A strong message in Mr. Dunn's lecture was that the medium is NOT the message: "I can't help observing that for all the time we have spent for more than a decade talking to each other about new technologies and the potential threats and opportunities. . . and for all the money we have invested in experiments and new ventures, our organizations are all still here and still doing fundamentally the same things we did when I first came upon the NFAIS scene in 1982.

"All the time we have spent worrying about our future, the future has been coming and going like a wave that we rode, only to find ourselves at approximately the same spot we started from. The truth is: We are who we are. We do what we do. And what we do is important and has lasting value."

Mr. Dunn cited an appendix to William Baker's 1977 Miles Conrad lecture that included the text from a 1958 report on scientific and technical information delivered to President Eisenhower. In reviewing the status of the information systems of that day, the report noted these kinds of information services in existence:

- Primary journals and monographs
- Abstracting journals
- Data
- Government Research reports
- PhD theses

Mr. Dunn stated, "None of this has changed, and I don't see any convincing evidence to believe that it will change

WAIS Searching vs Boolean Searching: A First Comparison

Contributed by Elliott Linder, NASA STI Program

anytime soon. For those of you who are saying to yourself, 'Wait a minute now, what about online, CD-ROM, Internet, electronic this, and electronic that,' the medium is not the message."

Mr. Dunn closed his remarks saying "I guess it's time for all of us to go forth boldly into the new Information Age . . . you go right ahead. I'll be right behind you."

Following the Miles Conrad Lecturer on Tuesday morning was the NFAIS Awards Ceremony. Kurt Molhom, NFAIS President, presented awards to Honorary Fellows and Board Service and Committee Service.

The conference closed on Wednesday afternoon following a presentation entitled *Navigating the Internet*.

Founded in 1958, the National Federation of Abstracting and Information Services is an international, not-for-profit membership organization comprising more than 70 leading information producers, distributors, and corporate users of secondary information. Its purpose is to serve the world's information community through education, research, and publication. ■

The NASA Scientific and Technical Information (STI) Program sponsored a recent study by the College of Library and Information Services of the University of Maryland on the comparative effectiveness of WAIS and Boolean retrieval strategies.

WAIS is a suite of programs using client/server architecture. It is based on the NISO Z39.50 information retrieval protocol which allows searchers, using a variety of "clients," to formulate natural language queries which are translated into appropriate formats for particular "servers" that contain the data to be searched. A WAIS server is a retrieval engine that uses statistical ranking algorithms to return retrieval lists that are ranked according to weighted frequency of occurrence. WAIS clients invite searchers to provide relevance feedback to the servers by selecting relevant documents, phrases, or sections from retrieved objects. Terms from these objects are fed back to the server, and new ranked lists are sent to the client.

The question posed by the NASA STI Program was how well WAIS performs compared to Boolean on aerospace data. Three years of NASA's Database (Dialog file 108) were loaded at NASA using a commercial WAIS server from WAIS Inc. The database consisted of 205,000 bibliographic records with abstracts. A WAIS Macintosh client was used to conduct searches on four topics identified by graduate students of aerospace engineering. Both terse and verbose queries were formulated. None of the queries were "natural language" queries but instead were constructed from terms and phrases used in the statements provided by the requesters.

" . . . much research and enhancement will be required to realize the potential of the WAIS technology."

Both high-recall and high-precision searches were run on the same database on Dialog. Brief citations for the retrieved document sets were provided to the requesters, who made relevance judgments on a five-point scale for each document. Since WAIS searches yielded items not retrieved by the Dialog searches, subjects ranked these documents as well. Also, additional WAIS searches were done using the relevance feedback of up to five highly rated titles.

Precision values for the high-recall Boolean searches were understandably low, and values for the high-precision Boolean searches were generally high. The WAIS searches fell somewhere in the middle, with terse queries giving slightly better precision than verbose queries for three of the four questions. Given that the WAIS system returns ranked results and provides severe cutoff limits, it was surprising that better precision was not found. And, contrary to expectations that the ranking algorithm should distribute proportionally more relevant documents near the top of the rankings, no apparent pattern of distribution was found.

Several problems with the WAIS system were illustrated by the study. First, WAIS provides a "black box" effect for the user. Users put in queries and get results based on hidden computations. For end users, this may be just what is needed if performance is demonstrably good. For professional intermediaries, however, using WAIS can be frustrating since it is impossible to deduce how results were obtained. Furthermore, users have good control over how they conduct searches in a Boolean system. Strategies for constructing queries, setting cutoff limits, and using relevance feedback with WAIS are yet to be developed.

Second, the WAIS ranking algorithm used in the study yielded disparate results. More problematic is the way relevance feedback is handled. Users presently have no control over how weights are assigned, and better ways are needed to keep the user informed of how the search is progressing and why results have been obtained.

The study was limited by the small number of questions and the fact that relevance judgments were made only by requesters rather than a panel of "experts." Despite its limitations, the study indicates that much research and enhancement will be required to realize the potential of the WAIS technology.

A full report on the project is in press and will be published by NASA in the near future. ■

RECON Indexing Quality Questionnaire

As part of its Total Quality Management program, the Center for AeroSpace Information is reviewing indexing quality for technical reports in the RECON N Accession Series, and would like to gather user input regarding indexing quality.

We would like all RECON users to respond to a questionnaire and provide opinions regarding indexing quality.

We will use the gathered information to plan improvements to the indexing process.

Please return by mail to IndexPAT, NASA CASI, 800 Elkridge Landing Road, Linthicum Heights, MD 21090-2934 or fax to CASI at 301-621-0134. Thank you for your help and interest.

RECON Indexing Quality Questionnaire—Part I

1. Do you perform searches on RECON? ☐ Yes ☐ No

If your response is "NO" it is not necessary to continue.

2. Please indicate the disciplines which best characterize the subject domains of your work (place an X for each applicable item):

- | | |
|------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> a. Aeronautics | <input type="checkbox"/> i. Mech Engineering |
| <input type="checkbox"/> b. Astronautics | <input type="checkbox"/> j. Physics |
| <input type="checkbox"/> c. Chemistry and Materials | <input type="checkbox"/> k. Social Sciences |
| <input type="checkbox"/> d. Electrical Engineering | <input type="checkbox"/> l. Space Studies |
| <input type="checkbox"/> e. Engineering | <input type="checkbox"/> m. Multidisciplinary |
| <input type="checkbox"/> f. Geosciences | <input type="checkbox"/> n. Other (Specify) _____ |
| <input type="checkbox"/> g. Life Sciences | |
| <input type="checkbox"/> h. Math & Computer Sciences | |

3. Please categorize your job function (place an X for each applicable item):

- | | |
|------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> a. Management | <input type="checkbox"/> e. Testing |
| <input type="checkbox"/> b. R&D | <input type="checkbox"/> f. Systems Support |
| <input type="checkbox"/> c. Design/Engineering | <input type="checkbox"/> g. Information Professional |
| <input type="checkbox"/> d. Construction | <input type="checkbox"/> h. Other (Specify) _____ |

4. What category best describes your organization (place an X at the appropriate response):

- | | |
|---------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> a. NASA | <input type="checkbox"/> d. Private sector(for-profit) |
| <input type="checkbox"/> b. NASA contractor | <input type="checkbox"/> e. Private sector(non-profit) |
| <input type="checkbox"/> c. Fed. employee | <input type="checkbox"/> f. Academic institution |
| | <input type="checkbox"/> g. Other (specify) _____ |

5. Are you an author of documents cited in the NASA STI database? If so, how frequently do you publish?

Please remove this insert, complete the form and fax to NASA CASI 301-621-0134, or mail to IndexPAT, NASA CASI, 800 Elkridge Landing Road, Linthicum Heights, MD 21090-2934

RECON Indexing Quality Questionnaire—PART II

1. Which of the following search methods do you use? (Place an X for each appropriate response):

- ☐ a. subject index searching using index terms
☐ b. free text abstracts
☐ c. title words

2. How frequently do you use the NASA Thesaurus as a retrieval aid?

- ☐ a. daily ☐ c. monthly ☐ e. once a year
☐ b. weekly ☐ d. once every 3 months ☐ f. less frequently

3. How many years have you used the system? _____

4. How frequently do you use the system (check one):

- ☐ a. daily ☐ d. once every three months
☐ b. weekly ☐ e. once a year
☐ c. monthly ☐ f. less frequently

5. Have you received RECON training (formal or informal)?

☐ Yes ☐ No

6. How long ago was your training? _____

7. Do you perform searches on other databases?

☐ Yes ☐ No

If yes, check other appropriate databases.

- ☐ Compendex ☐ Medline
☐ DTIC/DROLS ☐ Others (Specify) _____
☐ Inspec

8. How many years have you been performing online database retrieval? _____

9. In your current or previous positions have you been involved with assigning subject index terms from a controlled vocabulary?

☐ Yes ☐ No

If yes, check appropriate controlled vocabularies.

- ☐ NASA Thesaurus Terms
☐ LC Subject Headings
☐ Other (Specify) _____

10. Please record here any general or specific comments you have regarding RECON's indexing.

11. Would you be agreeable to a followup discussion of RECON indexing quality issues? ☐ Yes ☐ No

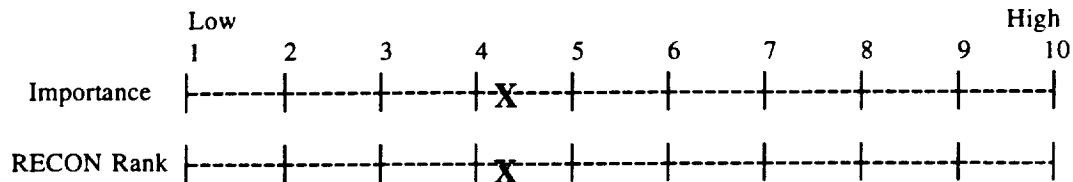
Name:

Phone No:

RECON Indexing Quality Questionnaire—Part III

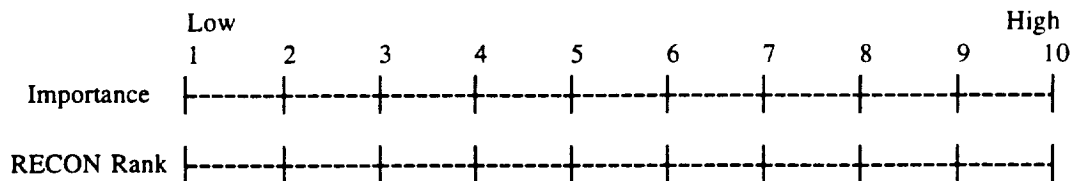
- Rank the level of importance you place on these indexing quality factors on a scale of 1 -10.
- Rank RECON's level of satisfaction in meeting these indexing quality factors on a scale of 1 -10. (1 = low and 10 = high). Place an X on the line under your numeric choice.

Example:



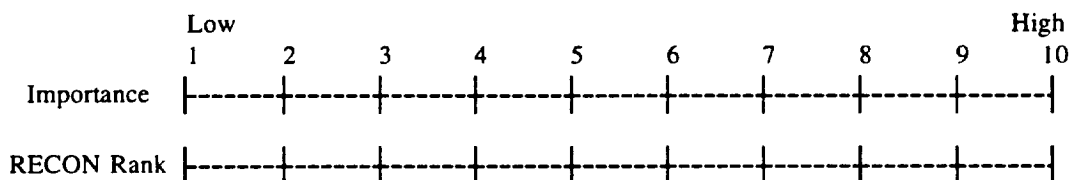
1. ACCURACY:

The degree of conformity of the indexing to a correct/precise representation of the concepts in a document.



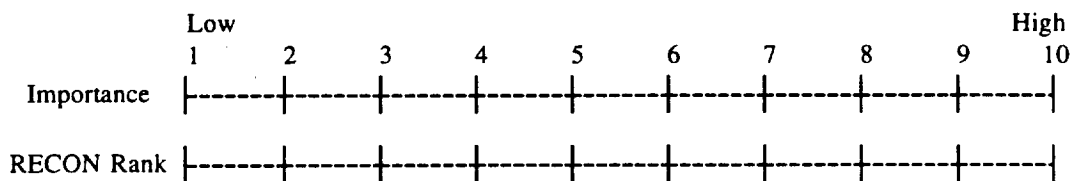
2. SPECIFICITY:

The degree to which the concepts are represented by the most specific index terms available in the vocabulary used.

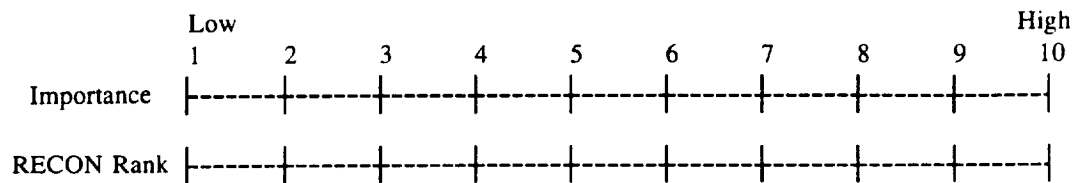


3. DEPTH/COMPLETENESS:

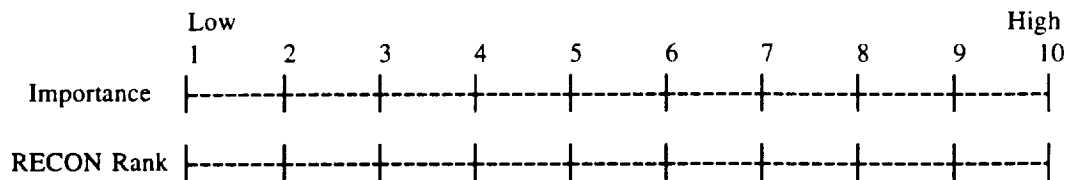
Exhaustivity, i.e., the degree to which all appropriate concepts of the subject matter are actually represented in the indexing, and the overall degree of thoroughness with which each concept is indexed.



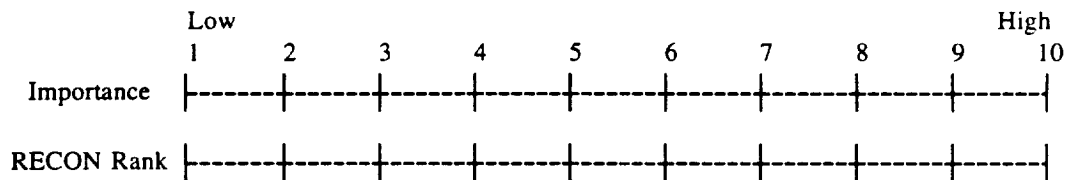
The degree to which the lag time between document receipt/publication and availability in the database is perceived to be reasonable.



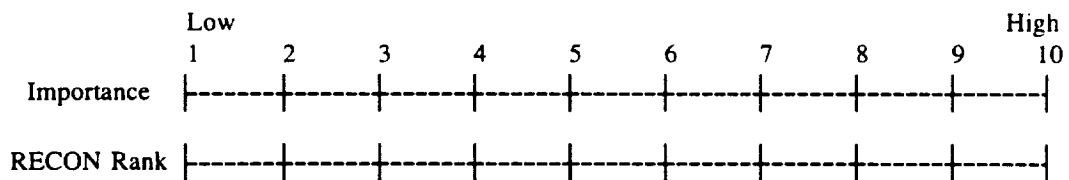
The degree to which the indexing excludes superfluous repetition.



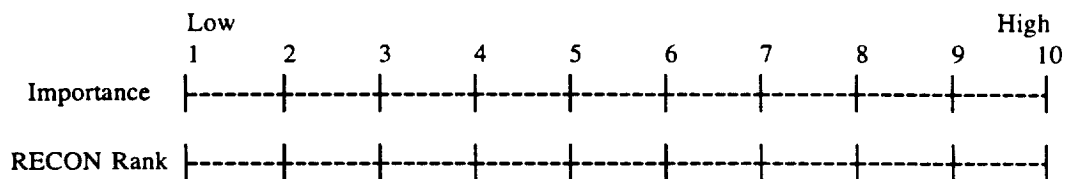
The degree to which the indexing allows for broad (generic) and narrow (specific) searching, i.e., the ability to create broad subsets of the database; to differentiate specific subsets or documents; and to link related documents together.



The degree to which the indexing reflects newer established concepts.



The degree to which the indexing of similar documents in the database is consistent, especially with regard to "major" concepts.



NASA Scientific & Technical Information (STI) Program Participates in AGARD Short Course on Aerospace Literature

Ms Judy Hunter, formerly of the NASA STI Program, Washington, DC, recently participated as a team member in presenting a Short Course on Aerospace Literature in Spain, Portugal, and Turkey. This short course, sponsored by the Technical Information Panel (TIP) of the NATO Advisory Group on Aerospace Research and Development (AGARD), was directed to users and producers of scientific and technical information.

The objective of the course was to familiarize them with the functions, operations, and management of STI. The purpose of the course was to impart an in-depth knowledge and understanding of what STI management duties are in order to help participants become more effective users and supporters of STI.

The course provided a background on what STI is and covered the mechanics associated with STI preparation, storage, and retrieval; some inherent problems in supplying information, including intellectual property rights, classification, and limitation markings; a definition of the roles of the users and the providers (the scientist/engineer and the information specialist); an assessment of current and new technology that will affect the management and use of STI; and a description of the STI assets of the country in which the course was presented, along with demonstrations of some of their online capabilities.

The course consisted of six formal presentations:

■ **Introduction to Scientific and Technical Information.** A discussion of the changing character of information, a

definition of STI, and an examination of the value of information.

■ **Processing Documents and Mechanics of Library Functions.** A description of the functions of the information center, including acquisition, cataloging and retrieval, availability, storage, and the many details associated with these functions.

■ **Identifying Sources of Pertinent Information.** A discussion of the physical forms of information and an illustration of some of the major sources of information.

■ **Security and Intellectual Property Rights.** A discussion of the protection of information against unintentional disclosure and unauthorized access, touching upon the legal aspects of using information, especially the limitations on information usage imposed by the various intellectual property rights sanctions in place throughout the world.

■ **User/Information Specialist Interface.** A discussion of the interaction among the originators or providers, the intermediaries or information specialist, and the scientist or engineer who are the end users of the information, and a description of the various roles of those involved in the information retrieval process, and the advantages or disadvantages of the mutual search effort.

■ **New Technology for STI Management.** A review of the key technologies currently used in information management functions.

"... an in-depth knowledge and understanding of what STI management duties are in order to help them become more effective users and supporters of STI..."

Upon the conclusion of the short course at each venue, the nations proposed that the presentations be produced in video format for further use within their borders. These videos would serve a twofold purpose; one, they would allow more flexibility in scheduling by taking the presentations to the audience, rather than trying to bring the audience to the presentation. Secondly, two of the nations would consider dubbing the presentations in their own language, which would expand the audience to which it could be presented, including universities and the private sector.

Ms. Hunter's AGARD Short Course presentation (TM 109718) can be obtained from the Center for AeroSpace Information (301- 621-0390). ■

AGARD Moves Toward an International Aerospace Database

Gladys Cotter, Chairman of the Technical Information Panel (TIP) of the Advisory Group for Aerospace Research and Development (AGARD), has obtained approval of the AGARD National Delegates Board to have TIP investigate the feasibility of establishing an International Aerospace Database (IAD).

The TIP envisages the IAD as a multidisciplinary database consisting of information relating to aeronautics, astronautics, chemistry and materials, engineering, geosciences, mathematics and computer sciences, physics, aerospace medicine and human factors, space sciences, and possibly other disciplines.

Currently, many nations are expending resources on national systems which duplicate each other. At the same time that this duplication exists, many useful sources of aerospace information are not being collected because of resource limitations. This situation results in a disadvantage to aerospace research and development. If the nations cooperate to provide an international aerospace system, resources could then be used efficiently to cover expanded sources of information, thus directly benefiting the aerospace R&D community.

Tentatively, speakers include individuals from the Energy Technology Data Exchange, the International Information System for Agricultural Sciences and Technology (AGRIS), World Aerial Photographic Index (WAPI), the International Nuclear Information System (INIS), and Russian representatives from the Academy of National Economy and the All-Russian Institute of Aviation Materials.

The speakers will address such topics as scope and coverage of the database; number of nations participating; description of the content of each record; how input is accomplished by the participating nations; language requirements; access to the database; document delivery; the pitfalls in developing and operating the database; budgeting/cost recovery mechanisms in place, and other pertinent information concerning the management and operation of the database.

After the workshop is concluded, the TIP plans to establish a Working Group to determine the feasibility of establishing an IAD, review the models of the above international database, and determine and outline the steps by which the database could be brought into being. ■

National Technical Information Service (NTIS) Fourth Japanese Scientific and Technical Information Conference Set for Boston

The fourth in a highly popular series of NTIS conferences on *How to Locate and Acquire Japanese Scientific and Technical Information*, has been scheduled for July 14-15 in Boston, Massachusetts. Emphasis will be on the practical aspects of the subject and will cover all new material. Thus, participants from previous conferences are sure to benefit.

For additional information on CONF 94-1, contact:

Barbara Payne/Rita Cunningham
NTIS
Springfield, VA 22161
703.487.4819
Fax: 703.321.8166

Final Volume of NASA Monograph Series is Completed

Cataclysmic Variables and Related Objects, NASA SP-507 is the final volume in an eight-volume monograph series on Nonthermal Phenomena in Stellar Atmospheres, a series, produced by NASA in cooperation with the French Centre National de la Recherche Scientifique (CNRS), that has emphasized and critically examined observational data and possible physical mechanisms more than formal atmospheric models and detailed computational procedures. As noted in the preface, it is hoped that "this approach will prove useful to students and researchers worldwide, who are usually more interested in confronting the observations directly than in starting with complex theoretical models as a basis for their own research."

This volume's introductory chapter discusses the general properties of cataclysmic variables. Chapters 2 through 5 detail observations and interpretation of dwarf novae and nova-like stars. Chapters 6 through 10 cover the general observational properties of classical and recurrent novae, the theoretical models, and the characteristics and models for some well-observed classical novae and recurrent novae. Chapters 11 through 14 give an overview of the observations of symbiotic stars, describe various models proposed for explaining the symbiotic phenomenon, and discuss a few selected objects. The concluding chapter examines many unsolved problems posed by the observations of the different classes of cataclysmic variables and symbiotic stars. ■

NASA Thesaurus Listserv Established

Contributed by Elliott Linder, NASA STI Program

A new NASA STI Program Listserv, Thesaurus-L, was created to provide a broader and more open forum for the Thesaurus Activity Network, established by the acting Center for AeroSpace Information (CASI) Lexicographer in January. This e-mail network was established in response to requests from NASA Center librarians and CASI indexers for a more timely method for receiving information related to NASA Thesaurus changes and for a more convenient means of submitting candidate subject terms and feedback.

The Listserv will perform the following functions:

- provide regular, timely announcements of new thesaurus terms and changes
- inform potential contributors about candidate terms currently being considered for inclusion in the NASA Thesaurus
- support and encourage the electronic submission of new-term requests, questions, and other feedback related to ongoing thesaurus development

The acting Lexicographer, Michael Genuardi, will be the Listserv "owner" and will continue to prepare the announcements. ■

SLA Aerospace Division Listserv Sees Growth

Contributed by Kay Voglewede

The Special Libraries Association (SLA) Aerospace Division's Listserv continues to experience growth, and now has over 90 subscribers. The group's creation was suggested at the annual division business meeting and was organized by the NASA Scientific & Technical Information Program. This discussion group provides subscribers with the opportunity to exchange ideas, post announcements, and discuss many topics. To subscribe to the list, send an e-mail message to **listserv@sti.nasa.gov** In the text section, type: **subscribe sla-aero YOUR NAME**

All messages sent to SLA-AERO are distributed automatically to everyone who is registered. If you have questions or problems with the listserv or subscribing, contact the NASA Access Help Desk at (301) 621-0390 or **help@sti.nasa.gov**. ■

New Thesaurus Terms

Subscribing to LISTSERVs

NASA Thesaurus Listserv

listserv@sti.nasa.gov.

In the text section, type:

subscribe Thesaurus-L YOUR NAME

SLA Listserv

listserv@sti.nasa.gov.

In the text section, type:

subscribe sla-aero YOUR NAME

Atomic Clusters

AFM (Microscopy)

Atomic Force Microscopy

Dispersion Strengthening

Ductile-Brittle Transition

Hardware Description Languages

HDL (Computers)

use Hardware Description Languages

Internets

Metal Clusters

Molecular Clusters

Molecular Dynamics

Oxide Dispersion

Strengthening

Satellite Clusters

use: Satellite Constellations

Satellite Constellations

use: Hardware Description Languages

VHDL (Computers)

X ray Optics

YSZ use: Yttria-Stabilized Zirconia

Yttria-Stabilized Zirconia

Changes/Deletions

Man-Computer Interface

Transferred to Human-Computer Interface

NOVA

Array term deleted

Rotorcraft Aircraft

Deleted. use Rotary Wing Aircraft

Is Your Mailing Label Correct?



Please provide any changes below and return to:

CASI ID Number: _____

Phone: _____

ATTN: _____

Organization: _____

Address: _____

ATTN: Registration
NASA Center for AeroSpace Information
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